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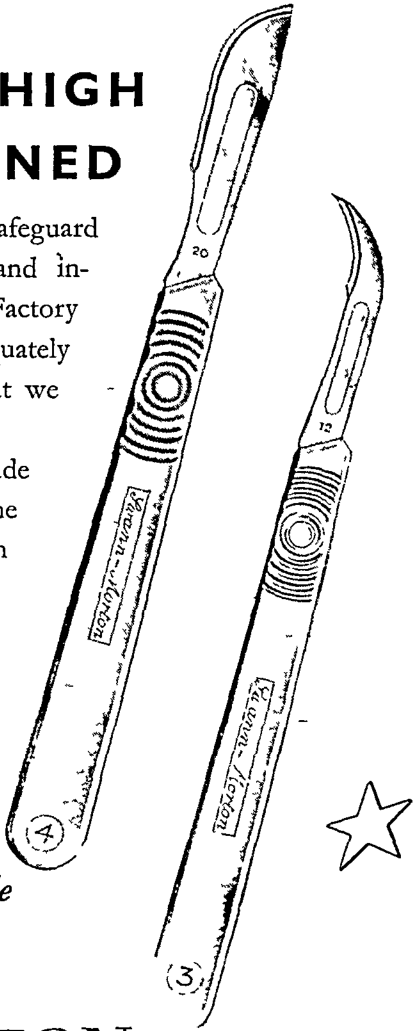

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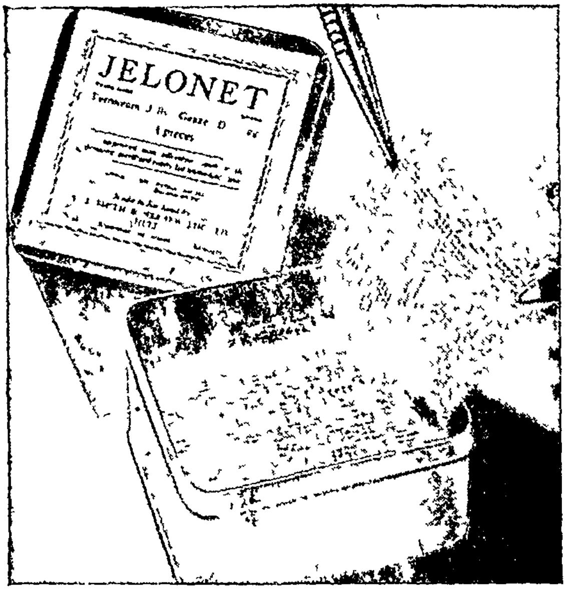

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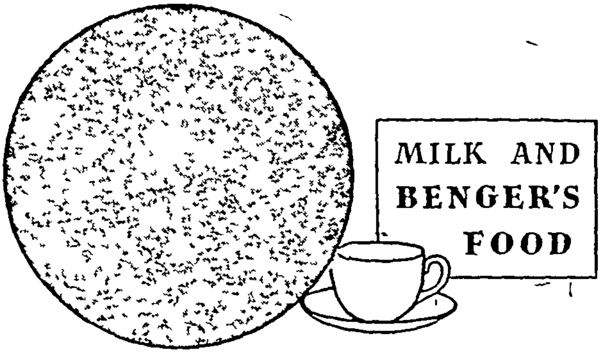

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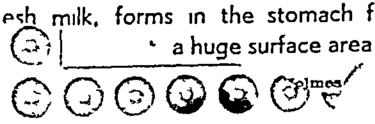

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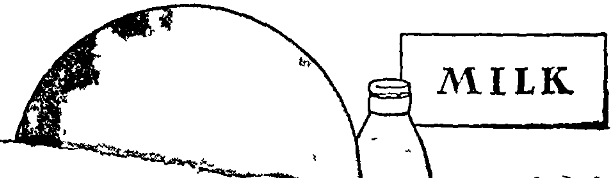

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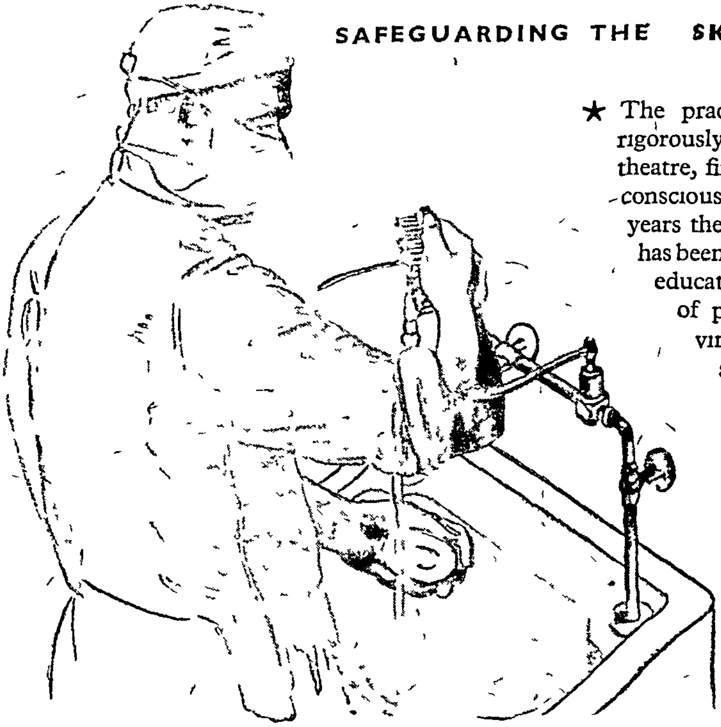

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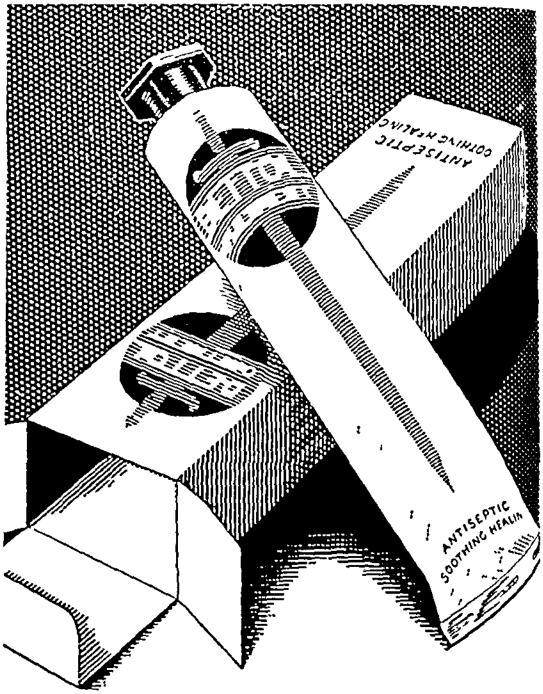

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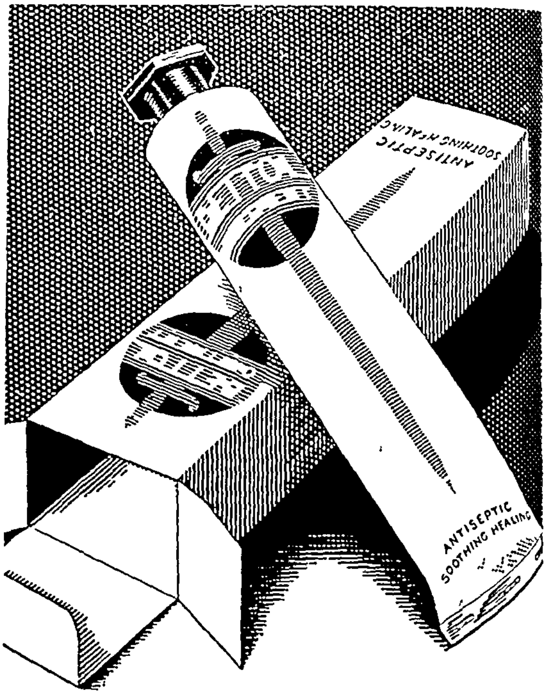

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CASE-RECORDS

CASE 1 —Male, aged 60 Seen 2½ hours after injury Right leg completely destroyed from 2 in below knee and small hole in abdominal wall, though splinter had not entered peritoneal cavity Tourniquet had been applied 15 min after injury and morphia gr ¼ given 15 min later Mentally dull but rational, no pain, no thirst, pallor ++, cyanosis of lips and fingers ++, no sweating, very cold Hb finger 100%, vein 104%, hæmatocrit 40% Pulse impalpable, B P not recordable

After 1 pint plasma in 15 min P 108, B P 40/? *After* 2nd pint plasma in 15 min P 110, B P 60/40, Hb finger 70%, vein 60% hæmatocrit 25 5% After 3rd pint plasma in 12 min P 160, B P 80/50 After 4th pint plasma in 23 min P 120, B P 105/55, Hb finger 47%, vein 45%, hæmatocrit 19% Had by now greatly improved in colour, pain in legs and abdomen Had to wait for admission to theatre on account of congestion, during which time B P *fell to 80/50 and* 1 pint blood administered Left theatre with B P 100/70 Amputation of leg through upper third of thigh, abdominal wall opened and f b removed Anæsthetic G O E After 24 hours condition excellent, P 78, B P 115/70, Hb finger 52%

CASE 2 —Male, aged 26 Seen 3 hours after injury Wound in left loin 8 in in diameter, multiple superficial wounds, abdominal *wound, small* wound right shoulder Morphia gr ½ 40 min after injury Warmed with electric blanket for 45 min before transfusion, Mentally clear and rational, pain slight, thirst ++, pallor ++, cyanosis slight, no sweating, hands very cold P 86, B P 50/30

After 1 pint blood in 20 min P 92, B P 70/60 After 2nd pint blood in 20 min P 94, B P 80/75 After 3rd pint blood in 20 min P 100, B P 95/75, colour greatly improved, operation started debridement, intestinal resection At end of operation P 90, B P 90/70 After 24 hours P 100, B P /80, general condition good

ASE 3 —Male, aged 24 Seen 3½ hours after injury iple small injuries of back, legs and arms, gaping hole in buttock 9 in in diameter, buttock almost completely ved, perforating wound left wrist joint Morphia gr ¼ ours after injury Warmed with electric blanket for 1¼ before transfusion Mentally clear, pain ++, thirst +, ++, cyanosis ++, sweating slight, T 95° F, P 82, 0/30, Hb ear 120%, vein 100%, hæmatocrit 43%

r 1 pint plasma in 20 min P 100, B P 70/40 After t plasma in 20 min P 120, B P 80/45 After 3rd pint *in 20 min* P 128, B P 100/55, Hb, ear 80% Greatly d but pallor still extreme, 1 pint blood given in P 120, B P 100/60 Started bleeding from buttock, blood given in 30 min During operation of debride- which much bleeding 2 further pints blood adminis ach in 15 min Anæsthetic G O E After operation B P 112/70 After 24 hours general condition good, B P 115/80, [illegible] 8%

4 —Male aged 20 Seen 4 hours after injury wounds and compound fracture of both legs Mentally *clear, not in great pain, thirst* ++, pallor ++, cyanosis of nails, no sweating, complained of cold Pulse impalpable, B P 60/30 Morphia administered

After 2 pints blood each taking 10 min P 120, B P 115/65 Great improvement in general condition, cyanosis disappeared, treated by warming and 1 pint blood by drip until turn came for theatre During operation received 1 more pint blood and left theatre with P 118, B P 90/50

CASE 5 —Male Seen 2 hours after injury Severe scalp wounds, one ear off, extensive laceration left arm and probably intrathoracic injury Mentally clear, colour ashen grey, complained of painful breathing, P 155, B P 70 Warmed and morphia gr ¼ administered

After 4 bottles *plasma in an hour P 120, B P 120/70*

CASE 6 —Male, aged 23 Seen 4⅓ hours after injury Simple fracture left femur compound fracture right femur, fracture left clavicle, left Colles's fracture, abrasions head Morphia gr ½ given Mentally clear, pain ++, thirst ++, colour normal, sweating nil, not cold B P 75/60, P 120

After 1 pint plasma in 8 min P 104, B P 105/80 After 2nd pint plasma in 10 min P 92, B P 120/90 Anæsthetic begun Had 3rd *pint plasma by drip occupying 45 min* At end of operation P 132, B P 145/50 Patient collapsed and died shortly afterwards Was found to have multiple injuries, including fractured base, blood in c s f, fracture ribs, small tears in liver and spleen, hæmorrhage into right suprarenal

CASE 7 —Male, aged 30 Seen 2½ hours *after injury* Very large wound in back, involving right kidney Had received morphia gr ¼ 2 hours after injury Apathetic, pain ++, thirst ++, pallor +++, sweating slight, cyanosis slight, cold, shivering Pulse uncountable, B P 95/60, Hb vein 120%, hæmatocrit 43%

After 1 pint plasma in 5 min P 150, B P 100/65 After 2nd pint plasma *in 10 min P 120, B P 105/70,* Hb vein 94%, hæmatocrit 33% After 3rd pint plasma in 30 min P 140, B P 110/80, Hb vein 74%, hæmatocrit 26% Sent for operation of debridement and ligature during which received 1 pint blood, 2 more pints blood given next day After 48 hours condition fairly good, P 120, B P 110/80, but passing much blood in urine Died 3 days later

CASE 8 —Male, aged 29 Seen 2 hours after injury Shrapnel wounds both legs, compound *comminuted* fractures right and left tibia and fibula, machine gun bullet wound in left loin, not penetrating abdomen Tourniquets applied to both thighs, given morphia gr ¼ an hour after injury and again an hour later Put to bed with foot raised and warmed Mentally clear, pain +, thirst +, pallor +, cyanosis of nails, sweating ++, cold, pulse impalpable, B P 60/40

One hour later, after 1 *pint plasma in 10* min pulse flickering, B P 70/? After 2nd pint plasma in 15 min P 120, B P 90/55 After 3rd pint plasma in 50 min P 110, B P 115/75 Taken to operating theatre and on table for 2 hours, during which fourth pint of plasma administered by drip Condition rapidly deteriorated when injured limbs were manipulated Died few hours afterwards

CASE 9 —*Male* aged 16 Seen 1½ hours after injury Compound fracture right thigh, much laceration and pulping of bone, and compound fracture lowest third left leg, much laceration and pulping of bone, gross swelling of both limbs above site of injury Morphia gr ⅓ 45 min after injury Mentally clear, pain ++ when moved, thirst ++, pallor ++, cyanosis of lips +, sweating slight, cold P 112, B P 80/55, Hb finger 90%, *ear* 95%

After 1 pint plasma in 12 min P 108, B P 95/70 After 2nd pint plasma in 20 min P 108, B P 95/70 After 3rd pint plasma in 45 min P 108, B P 110/75 Taken to operating-theatre for double amputation, during which 1 pint blood given in 28 min and 1 pint plasma as drip Left theatre with P 104, B P 120/70 Uninterrupted recovery

CASE 10 —Male, aged 26 Seen 2¾ hours after being hi on back by lump of rock, very large bruise left kidney region with great swelling left flank, and ? left pneumothora Given morphia gr ⅓ an hour after injury Mentally clear, pain in chest +, thirst +, no pallor cyanosis +, sweating slight temperature normal, P 130, B P 70/55, Hb vein 97%, hæmatocrit 37%

After 1 pint plasma in 15 min P 108, B P 100/50, Hb vei 84%, hæmatocrit 33 5% After 1 pint blood in 3 hours B P 125

After 24 hours condition satisfactory

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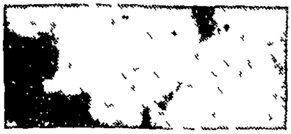
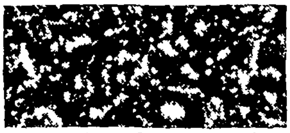


RAW MILK

PASTEURISED MILK

BOILED MILK—*The milk was momentarily brought to boiling point*

DILUTED MILK — *1 part m*
and 1 part water

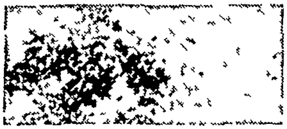


LACTIC ACID MILK (Special) — *Lactic Acid B P added drop by drop until milk just begins to curdle*

LACTIC ACID MILK — 30 *drops of lactic acid B P added per pint of milk*

CITRATED MILK — 1 5 *grains of sodium citrate added to 1 fl oz of raw milk*

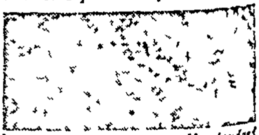
CITRATED MILK (Boiled)—1 5 *grains of sodium citrate added to 1 fl o of*
milk and the mixture brought to the



DILUTED MILK — 1 *part milk and 2 parts water*

MILK AND BARLEY WATER — 1 *part milk to 1 part Barley Water*

MILK AND CREAM — 1 *part milk to 1 part cream*

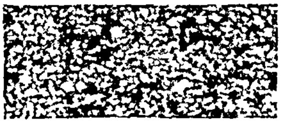


BENGER'S FOOD *prepared by standard formula and self dig d for 5 mins.*

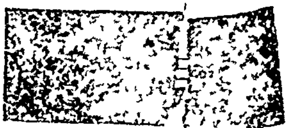
BENGER'S FOOD *prepared by standard formula and self digested for 15 mins*

BENGER'S FOOD *prepared by standard formula and self digested for 30 m*

An infant's gastric juice contains the enzyme rennin rather than pepsin.



This photograph shows the effect of rennet on Human Milk adjusted to pH 4 6



Here is shown the effect of rennet on Benger's Food prepared by Formula I and adjusted to pH 4 6

A short monograph on this subject has been published by Benger's Food Ltd., Holmes Chapel, Cheshire, and is available to any member of the medical profession forwarding his or her card.

entally clear, pain +, thirst ++, cyanosis slight, no eating, cold, P 144, B P 70/50

After 1 pint plasma in 10 min P 140, B P 85/65 After d pint plasma in 20 min B P 100/70 After 1 pint blood in) min P 100, B P 105/80 A further pint blood adminis- ired as slow drip during operation Died 5 hours later obably from bilateral hæmothorax

PRIMARY AND SECONDARY SHOCK

Primary shock due to psychogenic and neurogenic influences is common among air-raid casualties which each hospital soon after their injury Most are at least ightened and shaken These, from primary shock lone, may exhibit pallor sweating, feeble pulse and ow blood-pressure or even be unconscious Differentiation of primary from secondary shock is easy with xtremes of injury, when the wounding is of such severity hat immediate transfusion is obviously required and elay would be dangerous, or when there are no wounds nd transfusion would be both unnecessary and foolish But in intermediate cases differentiation is only possible by allowing a period of observation, the degree to which rest in the recumbent head-low position combined with warmth and morphia produces improvement will depend on how far the symptoms are due to primary shock If at the end of an hour the blood-pressure is still below 100 mm Hg some degree of secondary shock s probable and transfusion should be done before an anæsthetic is given But if within the hour the blood-pressure rises and stays above 100 mm. Hg it may be assumed even though a normal figure has not been completely reached, that the shock was mainly primary and that transfusion is not necessary for resuscitation, though it may well be required during operation. The blood-pressure should be taken every 15 min so that patients who are losing way may be transfused without delay In order to carry out this work satisfactorily a special resuscitation ward must be established between the reception point and the operating-theatre All the 24 cases here described had either wounds so severe as to brook no delay in instituting transfusion or a blood-pressure which failed to recover to 100 mm Hg with rest, warmth and morphia

ASSESSMENT OF SEVERITY

In general we have found that the blood-pressure is the most reliable measurable factor for assessing the severity of secondary shock and that other clinical manifestations are variable and not quantitative

The *pulse-rate* has not always been as rapid as it is generally assumed to be in severe secondary shock nor does it regularly rise in proportion as the blood-pressure falls Thus 5 cases (2 3, 15, 16, 22) had rates of 86, 82, 104, 92 70 with systolic blood-pressures of 55 mm Hg or less and one (12), who proved in a follow-up to be a hypertensive, had a pulse-rate of 58 with a systolic pressure of 95 mm In the remainder the pulse-rate ranged from 110 to 155 and did not appear to bear any constant relation to the blood-pressure The response of the pulse-rate to transfusion was even more irregular, in strong contrast to the response of the blood-pressure

The *mental state* in 17 cases was clear and rational This point which is of great practical importance—that the mental state is no index of the severity of shock—was repeatedly stressed by observers in the war 1914–18 who found that in the absence of head injury a clear normal mind was usual in secondary shock even within a few minutes of death

As to *pain*, all of our 24 patients had had morphia, pain is recorded as absent in 4 slight or moderate in 8 and severe in 11, and was not recorded in 1

Colour-changes are common but in no way quantitative, 22 out of 24 patients showed obvious pallor and most had also cyanosis of the lips and nails Extreme pallor in association with a relatively high blood-pressure suggests intense compensatory vasoconstriction

The general *temperature* of all severe cases is invariably subnormal and the extremities feel cold This feature, however, depends greatly on the atmospheric conditions, the exposure during transit and the efficiency of the methods for warming *Sweating* was present in 15 cases but the amount was by no means related to the degree of shock

The records of *blood-pressure* are shown in table I With two exceptions (7 12) the most severely wounded had the lowest blood-pressures The two exceptions are instructive Case 12 was found in a follow-up to be a hypertensive having a blood-pressure of 160/120 when lying in bed, her initial blood-pressure of 95 mm was therefore a relatively large fall from normal Case 7, though severely wounded and exsanguinated nevertheless appeared to be capable of maintaining his blood-pressure at 95 mm Hg by intense vasoconstriction Our experience of over 100 cases shows that this feature is a real entity especially in young subjects seen soon after wounding The phenomenon is suggested by an intense pallor in association with an unexpectedly high blood-pressure In the particular case here recorded this view is supported by the response to transfusion, in that 3 pints caused a rise of only 15 mm in blood-pressure though it much improved the man's general condition Apart from these two cases there has been a remarkable correlation between the reduction in blood-volume and the fall in blood-pressure while restoration of blood-volume by transfusion has been found to be associated with a proportional recovery in blood-pressure (tables I and II)

TREATMENT AND ASSESSMENT OF RECOVERY

It is generally accepted that the symptoms of secondary shock are caused largely by gross reduction in blood-volume which leads to an inefficient circulation, later to irreversible tissue-cell changes owing to malnutrition, and finally to circulatory failure The obvious treatment is to restore blood-volume Information is required as to the best fluid for this purpose, when to transfuse in what amount and at what rate From the physiological aspect whole blood is needed by those whose reduction in blood-volume is due mainly to whole-blood loss and this is usually the case with those who are neither burned nor crushed and who are seen soon after wounding before complex hæmatological changes have occurred We have analysed our cases in relation to fluid, time, amount and rate but have used more plasma than blood with a view to obtaining information as to its efficiency as a volume-restoring fluid

It has already been indicated that transfusion without delay should be carried out on those with serious wounds and a dangerously low blood-pressure, on those whose blood-pressure does not recover to 100 mm Hg within an hour of routine resuscitation and on those whose blood-pressure observed at 15-min intervals continues to decline during the resuscitation hour Blood-pressure readings have been taken during the course of transfusion after every 540 c cm of blood or plasma transfused Table I sets out the observed results and a detailed analysis shows that a rise of 10–20 mm Hg is obtained after each 540 c cm transfused, the average figure for the series for each successive bottle up to five being 19 1, 11 6, 16 4, 18 3 and 16 7 mm This table in conjunction with table II suggests that in order to obtain a systolic blood-pressure of 100 mm Hg or over it was necessary to transfuse not less than 50% of the calculated blood-loss which may amount to 1000–3500 c cm in severe cases of secondary shock Coincident with this improvement in blood-pressure there was a striking amelioration of other symptoms The behaviour of the pulse emphasised the unreliability of this factor for assessing improvement In a series of observations of pulse-rate before and after each 540 c cm bottle it was found that after twenty-one bottles the rate fell after twenty it rose and after four it remained unchanged Transfusion seemed to produce a fall of rate in those in whom it was initially rapid and vice versa The general response to transfusion, and particularly in the blood-pressure which appears to rise quantitatively with the amount transfused has been a constant feature of our cases

The value of blood-pressure determination has been emphasised by observations on cases in whom there has been no external evidence of severe loss of blood but detailed investigation has shown that such loss has taken place Case 16 illustrates this point The external injuries in this man of 64 were a simple fracture of one arm, two fractured ribs and a compound fracture of the femur with a small wound Five 540 c cm bottles were required during the resuscitation period and one more during operation to raise the blood-pressure to 100/55 This patient died 2½ days later from postoperative bronchopneumonia At autopsy it was found that the estimated loss to the circulation could be accounted for

CASE 11 —Male, aged 28 Seen 2½ hours after injury, compound fracture right femur, tibia and fibula, and fracture dislocation right carpus and metacarpus No tourniquet Morphia gr ¼ given Mentally clear, no pain, thirst +, pallor +, no cyanosis, sweating +, temperature normal, P ?, B P 70/50

After 1 pint blood B P 90/50 While 4 pints plasma were given in 1 hour 20 min there was progressive improvement, resulting in B P 115 though bleeding continued Excision of wounds and reduction of fractures begun Left theatre with B P 110

CASE 12 —Female, aged 50 Seen 3 hours after injury, deep wound right leg, smashed right and left feet (hanging by threads) with tourniquets still applied Morphia gr ¼ had been given 30 min after injury and repeated 2½ hours later Mentally clear, no pain, thirst +, pallor +, cyanosis +, no sweating, temperature normal, B P 95/65, P 58, Hb finger 95%

After 1 pint plasma in 20 min P 80, B P 110/80 After 2nd pint plasma in 40 min P 76, B P 118/85, Hb finger 74% During this 40 min consumed 2 cups sweet tea colour greatly improved Taken to operating theatre for amputation and débridement

After 24 hours condition good, P 80, B P 115/80 Six weeks later B P when lying in bed 160/120

CASE 13 —Male, aged 30 Seen 2 hours after injury, simple comminuted fractures of left femur, left tibia and fibula, and at lower ends of right tibia and fibula Morphia gr ½ given an hour after injury and warmed up, but condition deteriorated Tourniquet not applied until 1½ hours after injury Delirious, pain ++, pallor +++, cyanosis +, sweating +, cold, P 140, B P 60/30

After 1 pint plasma in 20 min P 110, B P 80/50 After 2nd pint plasma in 20 min P 100, B P 100/60 Condition improved, pallor less Mentally normal After 1 pint blood in 50 min P 130, B P 110/70 Taken to operating theatre for amputations, anæsthetic G O E, during operation given 1 pint blood in 60 min Left theatre with P 120, B P 110/70 After 48 hours condition satisfactory, P 92, B P 150/90

CASE 14 —Female, aged 48 Seen 5½ hours after injury, wound of right lower axillary region superficial to base of pleural cavity and right lobe of liver Given morphia gr ¼ an hour after injury and warmed for 3 hours before transfusion Mentally rational, no pain or thirst, pallor +, cyanosis +, sweating +, cold, pulse impalpable, B P unrecordable

After 2 pints plasma and 1 pint blood in 40 min colour improved but still pulseless After 1 pint plasma in 56 min pulse flickering, B P unrecordable but hands becoming pink After 1 pint plasma in 45 min pulse and B P improved progressively P 144, 132, 132, B P 80/40, 120/60, 120/60 At this stage was fit for surgical exploration, but this was not performed Patient died during next 24 hours from hæmorrhage, autopsy showed bomb fragment buried in lacerated liver

CASE 15 —Male, aged 56 Seen 4½ hours after injury, fractured transverse processes of the lumbar vertebræ, 5 fractured ribs, fractured right clavicle and rigidity of abdomen suggesting hæmoperitoneum Given morphia gr ¼ and warmed for 3 hours after injury Mentally confused, pain ++, no thirst, pallor +, no cyanosis, sweating +, warm, P 104, B P 50/35, Hb finger 110%, ear 110%, vein 108%, hæmatocrit 46%

After 1 pint plasma in 17 min P 92, B P 70/50 After 2nd pint plasma in 8 min P 100, B P 85/55, Hb finger 85%, vein 82% hæmatocrit 36% After 3rd pint plasma in 16 min P 104, B P 105/65, Hb finger 80%, vein 75%, hæmatocrit 33% Much improved, colour better, B P at two hourly intervals through night fluctuated from 95 to 110

After 24 hours condition good, P 96, B P 105/65

CASE 16 —Male, aged 64 Seen 2 hours after injury, compound fracture left femur, simple fracture left humerus, 2 fractured ribs, and the following subsequently discovered at autopsy retroperitoneal hæmorrhage, small cerebral hæmorrhage, left and right hæmothorax, small wound in spleen Mentally normal, pain moderate, thirst slight, pallor +, cyanosis slight, sweating +, cold, P 92, B P 50/?, Hb finger 94%, ear 96%, vein 106%, hæmatocrit 44%

After 1 pint plasma in 10 min P 96, B P 56/? After 2nd pint plasma in 10 min P 112, B P 72/50 After 3rd pint plasma in 15 min P 112, B P 84/50 After 4th pint plasma in 15 min P 92, B P 100/65, Hb finger 80%, ear 84% vein 72%, hæmatocrit 31% After 5th pint plasma in 40 min P 100, B P 95/60, Hb finger 62%, vein 64%, hæmatocrit 26% Taken to operating-theatre for débridement thigh and extension, colour good Left operating theatre with P 11 B P 100/50, having had 6th pint plasma in 65 min Died 2½ days later

CASE 17 —Male, aged 22 Seen 5 hours after bomb wound causing mangling of left foot, tourniquet applied Pallor ++, sweating +, P 110, B P 85/70

After 1 pint blood in 15 min P 96, B P 100/65 Taken to operating theatre with further pint of blood being administered by drip Uneventful recovery

CASE 18 —Male, aged 18 Seen 3½ hours after injury compound fractures right humerus, right leg, severe laceration left leg, multiple wounds especially round right shoulder Morphia gr ¼ given 1½ hours after injury and warmed with blankets Drowsy, pain slight, thirst ++, pallor +, cyanosis +, no sweating, cold, pulse impalpable, B P 50/35, Hb ear 92%, vein 89%

After 1 pint plasma in 10 min P 108, B P 80/45 After 2nd pint plasma in 40 min P 110, B P 95/60 After 3rd pint plasma in 30 min P 130, B P 115/70, Hb vein 55% Taken to operating-theatre with 1 pint blood by drip, extensive débridement lasting 1½ hours accompanied by much bleeding Died 6 hours after admission

CASE 19 —Female, aged 19 Seen 3 hours after injury, severe crush of both legs almost severing legs below knee, 3 puncture wounds of abdomen subsequently found to have penetrated cæcum, 1 puncture wound left thorax Morphia gr ¼ given and tourniquets applied to both thighs 30 min after injury Morphia gr ⅙ given 2 hours after injury Mentally clear, pain severe, thirst ++, pallor +, cyanosis +, sweating +, very cold, pulse impalpable, B P unrecordable

After 1 pint plasma in 10 min P impalpable, B P 40/unrecordable After 3 more pints plasma in 60 min P 144 After 1 pint blood in 45 min P 140, B P 98/unrecordable Delay in transfer to theatre and in operation, condition deteriorated although drip of blood running, blood administered in theatre but died 8 hours later

CASE 20 —Female, aged 38 Seen 8 hours after injury, multiple abrasions and large lacerated wound of face tearing both lips and whole of right side of cheek Morphia gr ¼ given 6 hours after injury Mentally clear, pain ++, thirst ++, pallor +, cyanosis slight, no sweating, extremities cold, pulse uncountable, B P 90/60 No improvement with conservative measures

After 1 pint plasma in 20 min P 124, B P 120/60 Another pint blood administered during operation for cleaning face, débridement and suture of left side of mouth General condition 2 days later excellent

CASE 21 —Male, aged 28 Seen 1½ hours after injury, blast effects to lungs, ruptured small intestine, extraperitoneal rupture of bladder, fractured pelvis, torn mesenteric vessels Morphia gr ¼ given 1 hour after injury Just conscious, pain ++, thirst ++, pallor ++, cyanosis ++, sweating moderate, stone cold, pulse impalpable, B P 50/?

After 1 pint blood in 7 min P 140, B P 60/? After 2nd pint blood in 15 min P 110, B P 80/? After 2 pints plasma in 52 min P 88, B P 110/70 During operation 2 pints blood administered slowly Survived 24 hours

CASE 22 —Female, aged 20 Seen 1¾ hours after injury, compound fracture left femur, extreme laceration left leg wound right knee and left elbow, multiple small wounds and fractured pelvis due to splinter discovered at operation Morphia gr ¼ given ½ hour after injury Mentally clear, pain +, thirst ++, pallor +, cyanosis slight, sweating ++, very cold, P 70, B P 55/?

After 1 pint plasma in 25 min B P 80/? After 2nd pint plasma in 50 min P 110, B P 50/? After 3rd pint plasma in 20 min P 110, B P 70/40 After 4th pint plasma in 35 min B P 85/40 After 1 pint blood in 60 min P 133, B P 100/60 Taken to operating theatre where 2½ pints blood given Died during operation

CASE 23 —Male, aged 52 Seen 3 hours after injury, fractured right femur, scalp wounds, severe bruising of back Morphia gr ¼ given ½ hour after injury Mentally slow, pain, thirst and pallor slight, cyanosis +, sweating +, very cold P 86, B P 60/40

After 2 pints plasma in 20 min P 88, B P 115/80 Operation, pin through tibia, 72 hours later B P 160/76

CASE 24 —Male, aged 25 Seen 3 hours after injury, compound fracture right tibia and fibula, puncture wounds both lower limbs 3 puncture wounds shoulder, puncture wound right chest Morphia gr ¼ given ½ hour after injury

The results shown in table II provide some suggestive cts concerning the phenomenon of hæmoconcentration ere is in the first place no glaring evidence that this at all marked in cases not suffering from burns or crush juries who are seen within 4½ hours of wounding in at in 7 out of 9 cases neither the capillary nor venous emoglobin before beginning treatment has been above 0% (range 94–110%) though in 2 cases the hæmoglobin is reached 120% Likewise there is no obvious evidence hæmodilution, or in 4 cases of any gross discrepancy etween venous and capillary hæmoglobin values This not to say that hæmoconcentration may not be found more advanced cases, in whom there is a longer period etween wounding and observation but it seems that e cardinal symptoms of shock can be present without uch hæmoconcentration The point can only be decided ith certainty by serial observations of hæmoglobin or ematocrit or both before treatment is begun

MISCELLANEOUS OBSERVATIONS

Plasma —The citrate plasma transfused (165 pints) to e cases recorded here as well as in our whole series has een from 10 to 56 days old The maximum given to any ne case has been six 540 c cm bottles There have een rigors in 3 cases but we have noted that almost all eriously battered and frightened casualties show some egree of shivering even before resuscitation has begun nvestigation of these cases has shown no evidence that he rigors were due to old plasma, opalescent plasma, lasma with clots or refiltered plasma

Blood or plasma —Both fluids appear to be equally fficient for restoring blood-volume in agreement with the xperimental results of Buttle, Kekwick and Schweitzer 1940) Of the 24 cases, 14 were treated with plasma lone 4 with blood alone and 6 with plasma and blood uring the resuscitation period More plasma than blood was used mainly for the purpose of collecting data, but we have formed the opinion that when the amount of transfused fluid needed reaches three 540 c cm bottles or more at least one bottle in three should be blood

Alkalosis —It is well known that shocked patients may show a varying degree of acidosis It is sometimes asked whether the amount of sodium citrate given in a large transfusion may not cause alkalosis The CO_2-combining power of the blood was determined in case 16 only this patient received in 3 hours six bottles of plasma containing approximately 28 grammes of sodium citrate The first determination was made after 18–19 g had been given and was 35 volumes % After 28 g the CO_2-combining power was 58 volumes % and early the following day 62 volumes % In this case a large amount of citrate given relatively quickly did little more than aid in the correction of an acidosis, which was probably much severer than the first of our readings indicates, and it seems unlikely that sufficient citrate to be dangerous could be given in the form of stored blood or plasma

DISCUSSION

In our experience the wounds in air-raid casualties have been multiple and severe So much so that had it not been for the promptitude with which they have been treated most of the patients recorded here would have died Only the less severe cases would drift slowly into the condition of shock which is found in battle casualties Hence these preliminary results do not necessarily contradict observations made during the war 1914–18 With these severe injuries the onset of symptoms of shock appears to be rapid and the cardinal sign of the condition a sustained and progressive lowering of the blood-pressure, is well established within a few hours Lowered blood-pressure as well as some of the other features of secondary shock (sweating, thirst pallor) are also found in primary shock It therefore seems wise to differentiate primary from secondary by allowing a period of observation during which rest in the recumbent head-low position is combined with warmth and morphia, before resorting to transfusions unless the nature of the wounds makes it obvious that the patient must have suffered the reduction in blood-volume which is the cause of the cardinal sign of secondary shock This small series emphasises that, in the earlier phases, a blood-pressure reading is the only reliable measurable observation and that pulse-rate does not always rise as blood-pressure falls Pulse-rate may be dangerously misleading

Our results justify the conclusion that reduction in blood-volume demands a reasonably quantitative replacement of protein fluid if a permanent improvement in condition is to be obtained and maintained through a perhaps severe operation In some cases the amount of fluid required is almost unbelievably large but with each successive pint transfused there should be an appreciable rise in blood-pressure of 10–20 mm Hg If this does not occur continued bleeding should be suspected Nevertheless, over-enthusiasm for quantitative replacement has its dangers An overfilled circulation is almost as great a menace as one which is dangerously emptied When hæmatological tests can be performed these supply a valuable check on the blood-pressure readings which should, whenever possible, never be omitted In the absence of blood-pressure readings attention should be paid to the volume of the pulse rather than to the rate Our impression is that 2 pints can be administered quickly without risk to a case of secondary shock with a blood-pressure below 100 mm Hg If this produces the anticipated rise in blood-pressure more can be administered with safety, though if the clinical condition has equally improved the rate of administration can be judiciously slowed But if there is no improvement in blood-pressure with 2 pints quickly administered, and continued bleeding is neither obvious nor likely, a short time should be allowed for warmth and fluid by mouth to bring about that later improvement in blood-pressure which a number of cases appear capable of effecting This is a better practice than continuing with a large rapid transfusion which carries with it a danger of pulmonary œdema if the circulation is overfilled The rate of administration after the first 2 pints requires sound clinical judgment But whenever there is clear evidence of gross loss of blood an approximately quantitative replacement should be aimed at

SUMMARY

In observing 24 cases of secondary shock a sustained and serious fall in blood-pressure in spite of simple resuscitation procedures has been found to be the one reliable clinically measurable criterion of the severity of the condition The pulse-rate is unreliable

Simple hæmatological investigations combined with plasma transfusion provide a helpful check on deductions made from blood-pressure readings with regard to the amount of fluid that needs to be transfused

As a rough rule a rise of 10–20 mm Hg can be anticipated from every 540 c cm transfused provided that bleeding has ceased and that no other causes of loss of circulatory fluid are operating

Plasma and blood are equally effective for restoring blood-volume With large transfusions 1 pint in 3 may, with advantage be blood

An approximately quantitative replacement of lost fluid is required At least half of this should be protein fluid, otherwise the restoration of blood-pressure will be only temporary and an operation will not be well borne

Transfusion should continue during any delay before operation as well as during operation especially if more blood is likely to be lost at that time

The observations reported here have been carried out by two teams consisting of a clinical observer, who recorded blood pressure, pulse rate and other clinical facts, a hæmatologist, a " transfuser " and one or two V A.D nurses These have devoted their whole time to recording results unhampered by other work Even with this generous allotment of personnel it has not been possible for any team to deal with more than 3 or 4 cases in a period of six hours We are grateful for the assistance of Captains J E Vaughan Jones, S Glaser and H Ellis, Lieutenants H W Bailie, J Dean, W Wynne-Willson, Ethel Whitby, Faith Poles and Joyce Morgan, Q.M.S Bushby and Staff-Sergeant R Blake, all of the R.A.M C , and for the facilities afforded by the staffs of the Bristol Royal Infirmary and Southmead Hospital

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M R C War Memorandum No 1 (1940) H M Stationery Office

TABLE I—RELATION BETWEEN RECOVERY OF BLOOD PRESSURE AND VOLUME TRANSFUSED

Case No	Age	Initial pulse rate	Initial B P	B P after pints 1	2	3	4	5	Time taken (min)
1	60	Un	Un	40/Un	60/10	80/50	105/55		65
2	26	86	50/30	70/60*	80/75*	95/75*			60
3	21	82	40/30	70/40	80/45	100/55	Bl		60
4	20	Un	60/30	N R *	115/65*				20
5	?	155	70/Un	N R	N R	N R	120/70		60
6	23	120	75/60	105/80	120/90				18
7	30	Un	95/60	100/65	105/70	110/80			45
8	29	Un	60/10	70/Un	90/55	115/75			75
9	16	112	80/55	95/70	95/70	110/75			77
10	26	130	70/55	100/50	125/N R *				195
11	28	Un	70/50	90/50*	Bl				
12	50	58	95/65	110/80	120/85				60
13	30	140	60/30	80/50	100/60				40
14	48	Un	Un	N R	N R *	N R	80/40	120/60	140
15	56	104	50/35	70/50	85/55	105/65			41
16	64	92	50/Un	55/Un	70/50	85/50	100/65 P Bl	95/60	90
17	22	110	85/70	100/65*					15
18	18	Un	50/35	80/45	95/60	115/70			80
19	19	Un	Un	40/Un	N R	N R	N R	98/?*	115
20	38	Un	90/60	120/60					20
21	28	Un	50/?	80/?*	80/?*	N R	110/70		74
22	20	70	55/?	80/?	50/?	70/10	85/40	100/60*	190
23	52	86	60/40	N R	145/80				20
24	25	144	70/50	85/65	100/70	105/80*			60

Un = Unrecordable N R = Not recorded
Bl = Bleeding P Bl = Probably bleeding

All transfusions were of citrated plasma except those marked * where citrated blood was given

as follows swelling of arm and thigh 1200–1500 c cm, hæmothorax 200 c cm, hæmoperitoneum 250 c cm, retroperitoneal hæmorrhage 800 c cm, external loss at time of injury ?, total 2600 c cm + In all cases seen by us it has appeared that the loss of blood-volume can be accounted for by external loss and by extravasation into the injured area In no case has there been any evidence to suggest loss of plasma in regions remote from a seat of injury

The volumes transfused (tables I and II) concern the amount necessary to relieve secondary shock prior to operation It must be remembered that delay in operation after resuscitation may be associated with deterioration in general condition first from continued blood-loss and secondly from excretion of the citrate portion of the transfused plasma or blood Resuscitated patients should be regularly observed, and if necessary transfusion should be continued during the period of delay Furthermore, most cases suffer hæmorrhage at operation No less than 15 of our 24 cases required transfusion during the operation itself

In general we have concluded that the amount to be transfused should be governed by the blood-pressure response, on which a watch should be kept during any delay as well as during operation As to rate we have formed the opinion that the first two 540 c cm bottles should be administered rapidly, each bottle occupying about 15 min Further amounts, except when the blood-pressure is dangerously low (75 mm or less), should be given at a slower rate and be governed by clinical judgment Transfusion with a blood-pressure in the region of 100 mm Hg should be continued as a drip, allowing a rate of one bottle in 3–4 hours This last procedure is a good safety measure to tide over any delay in operation, while the transfusion, administered by cannula, can accompany the patient to the theatre and then be speeded up if there is any sudden hæmorrhage or rapid deterioration in general condition

HÆMATOLOGICAL ASPECT

Of our 24 cases, 9 have been investigated hæmatologically, some more completely than others, 8 have been sufficiently examined for the serial hæmoglobin or hæmatocrit determinations to permit of calculation of the blood-volume at the beginning of treatment by the method described by Bushby, Kekwick and Whitby (1940) When the blood-volume is known a shrewd estimate of the blood-loss can be made by assuming an approximate normal blood-volume of 5½ litres for a man and 5 litres for a woman Table II shows that it is possible to sustain an acute loss of as much as 3½ litres of b and yet survive provided that reasonable restoration blood-volume is carried out quickly and adequat There can be little doubt that if these cases had suff the delay in treatment which is almost inevitable battle casualties most of them would never have reach a dressing station alive The series provides examp of both the accuracy and the fallacy of the method o estimating blood-volume As to accuracy, case 15 w examined by consecutive hæmatocrit measurement venous blood and estimations of the hæmoglobin cont of capillary blood, the blood-volumes calculated fr these different angles were close—3 9, 4 0, 3 8, 4 1 lit respectively Fallacy is well shown by case 16 where autopsy two days later made it clear that he was activ bleeding at the time of investigation Continuance bleeding renders the calculation inaccurate, biasing th result towards underestimate of blood-loss in direct p portion to the amount of bleeding From the clinical asp there can be no doubt that continuance of bleeding is t commonest cause of failure to affect a rise in blood pres despite adequate transfusion Table II sets out th calculated blood-loss, the total and protein fluid restor to the circulation, and the effect of this on the blood pressure The results show that when the calculat blood-loss is restored to the extent of 50% or more t effect on the blood-pressure is usually satisfactory The hæmatological results therefore confirm the accept clinical belief that transfusion should continue until blood-pressure has been satisfactorily restored But th also provide a valuable check on clinical impression Fo example, case 16 shows that when the calculated blood loss is disproportionately small in relation to the amount of fluid necessary to restore blood-pressure, continuou unrevealed bleeding should be suspected There are also other, perhaps uncommon, causes of a sustained low blood-pressure in a wounded man besides reduced blood volume The simple hæmatological check combined with good clinical judgment can prevent such cases from having a gross excess of fluid transfused in an effort to restore blood-pressure, so avoiding the danger of pulmonary œdema

Table II analyses the fluid administered in terms of it protein content—that is, of that portion of the fluid which will remain in the circulation, in contrast to the crystalloid portions which are invariably excreted fairly quickly The results show the effect on blood pressure up to the end of the resuscitation period The importance of maintaining the good effect during the operation period has already been stressed For this permanent result only the protein fraction can be considered effective

TABLE II—HÆMATOLOGICAL FINDINGS AND RELATION OF CALCULATED BLOOD-LOSS AND INTRAVENOUS FLUID REPLACEMENT TO BLOOD PRESSURE BEFORE AND AFTER RESUSCITATIVE (BUT NOT OPERATIVE) TREATMENT

Case No	Hb vein	Hb finger	Hb ear	Time after wounding (hrs)	Calculated blood-loss (c cm)	Fluid administered (c cm)	Protein fraction of this	B P before	B P after	Percentage of
1	104	100		2½	3500	2160	1540	Un/Un	105/55	6
3			120	3¼	2250	1620	1155	40/30	100/55	
7	120			2¼	2000	1620	1155	95/60	110/80	8
9		90	95	1¼						
10	97			2½	1100	1120	825	70/55	125/ N R	10
12		95		3	1200	1080	770	95/65	120/85	
15	108	110	110	4½	1600	1620	1155	50/35	105/65	10
16	106	94	96	2	500•	2700	1925	50/Un	95/60	15
18	98		92	3¼	3000	1620	1155	50/35	115/70	8

• Probably bleeding Un = Unrecordable N R = Not recorde

Hence it is essential that the transfused protein fractio should be not less than 50% of the fluid lost and preferabl more, bearing in mind that with Army Blood-transfusio Service plasma of every 7 pints transfused 2 are lost crystalloids The experimental results of Maglader Solandt and Best (1940) showed that a protein replace ment of at least 40% was required when treating hæmo rhagic shock with serum rly according to convenience The first or loading" se is ¼ g higher than the average dose for a child cept an infant under six months) and ½ g higher for adult In all severe cases especially those in coma se who cannot or will not swallow, and those who are miting the drug should be given intravenously for e or two doses and thereafter by mouth or stomach-be The 5% sodium solution may be given intra-scularly if intravenous injection is impracticable trathecal injection should never be given, the solution dangerously irritating A dose of 20 c cm (1 g) of e sodium solution given intravenously is usually fficient for an adult, 40 c cm may be given in a very vere case For a young child or infant 10 c cm (½ g) ffices The external jugular vein is a convenient site r injection in infants

Such dosage of sulphathiazole has so far proved to be most entirely non-toxic, and this is the great advantage the drug over sulphapyridine Nausea vomiting d consequently dehydration were rare · only 7 cases mited twice or more A single intravenous injection sodium sulphathiazole seemed to stop the vomiting rikingly in 2 children in another case an enema had e desired effect There was neither mental depression r disorientation such as are common with sulphapyri-ine, and cyanosis was absent or slight Drug rash, rug fever, erythema nodosum and hæmaturia (all of hich are said to be fairly common with sulphathiazole) ere not encountered in this series possibly owing to he relatively short periods of treatment Slight leuco-enia occurred in 1 case, a boy aged three years who eceived 24 g of sulphathiazole in seven days, his white ells numbered 4600, with 70% polymorphs on the eventh day of treatment, the drug was stopped imme-iately and the next day the white cells were 5500 and hereafter steadily increased This relative non-toxicity f sulphathiazole justifies the high initial dosage of 3 g aily for infants and 9 g daily for adults I believe that losage of any of the three sulphonamide drugs should ever be lower than this in meningitis

Sulphapyridine is still often given in what might be alled the "pneumonia dosage"—6 g daily (after the two preliminary "loading doses") in adults, and about 1 g daily in infants I quote 2 examples which serve to indicate that these amounts are inadequate and therefore may be dangerous in meningitis

CASE 1—A woman of 54 was admitted to a general hospital semi-comatose, with petechial rash on body and limbs, neck rigidity, pharyngitis and bronchitis The C S F was purulent and contained meningococci She was treated with 20 c cm Soluseptasine intravenously, followed by sulphapyridine 6 g daily for two and a half days, when she was transferred to the Park Hospital She was still semi comatose, with neck rigidity and a petechial rash, the C S F contained over 5000 cells per c.mm and still showed meningococci in films, although they did not grow on culture She was put on sulphathiazole 9 g daily In 48 hours the C S.F contained 335 cells per c mm (mononuclears 60%) and no organisms, and she was rational and comparatively well During ten days she received 15 g of sulphapyridine and 43 g of sulphathia-zole Eleven days after the drug was stopped she relapsed, meningeal signs reappeared and the C S.F was again turbid, with over 1000 cells per c.mm but no organisms demonstrated She was put on a second course of sulphathiazole, beginning with 12 g in the first twenty four hours, followed by 9 g in the next three days, the dosage was then gradually reduced During the relapse she had 64 g sulphathiazole in eight and a half days, at the end of which period blood counts were normal She made a complete and rapid recovery from the relapse

This was the only relapse in the whole series and I consider it to be associated with the low dosage (6 g) of sulphapyridine in the first two and a half days

CASE 2—A boy aged 10 months was admitted to a general hospital with the diagnosis of pneumonia Sulphapyridine ¼ g was given thrice daily for two and a half days Increasing neck rigidity, irritability and tense fontanelle, lumbar punc-ture then yielded a turbid C S F still containing meningococci He was transferred to the Park Hospital where 1 g of sulpha-thiazole was given as a loading dose, followed by 3 g daily for three days; the dose was then gradually reduced Within three days all neck rigidity had disappeared and recovery was rapid He was discharged after seventeen days

I do not know why infants and young children require an amount of the drug two or three times as high in proportion to body-weight as that which is appropriate for adults I do know, however that they tolerate it and that any less amount may be dangerous These were the only 2 cases in the series in which meningococci were demonstrated as long as two and a half days after chemotherapy began and I think that the dosage of sulphapyridine was dangerously low

COMPLICATIONS

Paresis of the right sixth cranial nerve developed in 5 cases of the left in 1 of both sixth nerves in 1 and of the right seventh in 2 These pareses all cleared up in periods ranging from a few days to three months The serious lesion of the eighth nerve which results in absolute deafness is noted under 'sequelæ" Arthritis or bursitis occurred in 8 cases involving variously the fingers wrist elbow shoulder and knee-joints The synovial fluid was often turbid but the joints cleared up in a few weeks or less Glycosuria was present for two days after admission in one case, a woman of fifty, and there was no ketosis Shallow sprawling vesicles and ulcers in the purpuric areas of the rash were noted in 3 cases and were probably meningococcal in origin No organisms were isolated from these ulcers or from joint exudates probably owing to the effect of the drug In one case there was a relapse of the meningitis

There were only 2 deaths in the whole series The first was a fulminating case in a man of forty-five who was found in absolute coma and died within twenty-one hours of admission He had a total of 6½ g of sulphathiazole The other patient (case 3) died six hours after admission—before sulphathiazole could be effective

CASE 3—A soldier aged 19 was admitted on the second day of disease complaining of intense headache and pains in limbs There was a profuse petechial rash on trunk and limbs, considerable neck rigidity and some head retraction He was restless and irritable when disturbed, and drowsy, but not comatose The C S F was slightly turbid, under pressure and contained meningococci He was difficult to manage at lumbar puncture and was therefore given morphine gr ⅓ and hyoscine gr $\frac{1}{100}$ hypodermically Four hours later he was still rather restless, the pulse was good, respirations not shallow, but the pupils were contracted, he was swallowing drinks quite well Two hours later he was found by the nurse pulseless and moribund and with pupils widely dilated He died five minutes later, six hours after admission. Treatment was by sulphathiazole 2 g by mouth on admission and 1½ g four hours later, a total of 3½ g At autopsy there was moderate congestion of the meningeal vessels and some sero fibrinous exudate about the optic chiasma and in the sulci

This death was unexpected He was a healthy young man and with only a moderately severe attack of meningitis which we had expected to cure rapidly by chemotherapy An experience of two or three similar cases suggests that the morphine and hyoscine was an indirect cause of this death although there was no actual evidence of morphine poisoning In acute meningitis hypodermic morphine is best restricted to gr ⅙ at any one dose

SEQUELÆ

The *only* sequela of practical importance was deafness This is a nerve deafness, often absolute, permanent and bilateral and it is now a serious public-health problem and calls for special measures of aftercare In 2 cases the deafness was fortunately partial and cleared up in a few days No less than 5 patients developed absolute or nearly absolute deafness in 4 it was bilateral and 1 unilateral The ages were 3, 4 6 32 and 54 years respectively In at least 2 cases a vestibular lesion causing difficulty in balancing was present in addition, but this cleared up or was compensated almost completely after several weeks The deafness in 2 cases was noted on the day before admission to hospital, and in the other 3 cases, all young children, it was probably present on admission In only one case was any sulphonamide drug given and then only g ½ before signs of deafness appeared Deafness in meningitis thus appears in the early acute stage, is not due to the drug and was apparently cured in only 2 cases out of 7 The apparent

SULPHATHIAZOLE IN CEREBROSPINAL FEVER

By H STANLEY BANKS, M D Glasg, D P H
MEDICAL SUPERINTENDENT, PARK HOSPITAL, L C C

INTEREST in sulphathiazole (2 *p* amino benzene sulphonamide thiazole), M & B 760, Thiazamide or Ciba 3714, since January, 1940, has been chiefly focused on its action in staphylococcal and more recently in pneumococcal infections Gsell (1940) reported favourably on the treatment of pneumococcal, gonococcal, coliform and meningococcal infections with this drug, and described 7 cases of cerebrospinal fever, all of which recovered Since then, apart from a brief reference of my own to 15 cases (Banks 1940a), I have been able to trace only three articles on the use of sulphathiazole in cerebrospinal fever, all in Hungarian journals, and have been unable to obtain translations In America there is a disposition to view with disfavour the employment of sulphathiazole in meningitis because it achieves only a low concentration in the cerebrospinal fluid According to Rammelkamp (1940) "sulphathiazole diffuses irregularly into the cerebrospinal fluid and therefore has not been used in meningitis" Carey (1940) goes so far as to state that "it should not be used in meningitis, as its concentration in the spinal fluid reaches only from 10 to 30% of that in other body fluids" I hope to show, however, that this conclusion is contradicted, at least for meningococcal meningitis, by the success obtained in practice, although I admit that Carey's premises are substantially correct

Sulphathiazole treatment was adopted at the Park Hospital in May, 1940, and used exclusively during the post-epidemic period, May 15–Dec 27, 1940 The cases, on the whole, were intermediate in severity between those of the epidemic period (January–May, 1940) and those of the two previous seasons of sporadic incidence, 1937–38 and 1938–39, when other sulphonamide drugs were used Of the 96 cases treated with sulphathiazole 17 were classified as mild 50 as moderate, 26 as severe and 3 as very severe Exactly a third (32 cases) had petechial or purpuric rashes It was difficult to make an accurate clinical assessment of severity, owing to the exceedingly rapid improvement effected even in the most severe cases by sulphathiazole, especially by an intravenous injection For the same reason the meningococcus could not be demonstrated in a considerable proportion of cases Many of the patients had had one or more doses of sulphapyridine in the general hospital from which they were transferred Thus, though all were typical clinical cases and had turbid or purulent cerebrospinal fluid the meningococcus was seen or grown in 66 only, typing in 25 cases showed 17 of group I, 5 group II and 3 inagglutinable Of the whole series 7 had had sulphapyridine treatment before admission for thirty-six hours or more, 4 of these were judged to be recovering on admission and were accordingly excluded and classed with the sulphapyridine series The remaining 3 cases had a dosage of sulphapyridine which is not unusually given but which I am now convinced is dangerously low—e g, 6 g daily for an adult, or 1 g daily for an infant of 10 months Of these cases 2 had meningococci in the C S F after two and a half days of treatment, a thing which never occurred after sulphathiazole in standard dosage, and the third case had flakes of exudate still coming away through the lumbar puncture needle All 3 rapidly recovered on sulphathiazole and were therefore allocated to the sulphathiazole series

TABLE I—RESULTS OF CHEMOTHERAPY IN PREVIOUS SERIES

Age group (years)	1937–38* (sporadic)		1938–39† (sporadic)		Jan –May 1940† (epidemic)	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
Under 1	10	1	10	1	13	6
1–5	10	2	22	1	32	3
5–20	23	2	24	1	39	1
20–40	21	4	19	0	38	1
Over 40	6	2	5	2	12	1
Total	70	11	80	5	134	12
Case fatality rate	15 7%		6 25%		9 0%	

* Serum and sulphanilamide
† Sulphanilamide or sulphapyridine, or both

In 52 of the 96 cases one or more doses of sulphapyridine had been given before admission, and in 44 cases sulphathiazole was the only treatment Serum had been given to 2 cases only before admission, and was without appreciable effect Experience of this series has confirmed my opinion that there is no demonstrable advantage in combining serum with chemotherapy, provided that the drug is given in adequate dosage and intravenously if necessary The effect of adequate chemotherapy is usually demonstrable within twelve hours, while the effect of serum takes two or three days to show itself

TABLE II—SULPHATHIAZOLE SERIES, MAY–DECEMBER, 19

Age group (years)	Sulphathiazole		Total	Deaths
	Mainly	Wholly		
Under 1	4	2	6	
1–5	7	13	20	
5–20	11	13	24	1
20–40	20	9	29	
40–50	5	4	9	1
50–60	3	3	6	
Over 60	2		2	
—	52	44	96	2

Results of treatment in three series of cases treated in this hospital since chemotherapy was introduced are given in table I (see Banks 1938, 1939, 1940b) The age-grouping is somewhat similar in both tables except that, in the sulphathiazole series (table II) the proportion of infants is somewhat lower and of patients over forty somewhat higher In 1937–38 treatment was by serum and sulphanilamide In 1938–39 and in January–May, 1940, treatment was by sulphanilamide or sulphapyridine or both drugs combined Results in the present series of cases (table II) treated with sulphathiazole alone, or with a few preliminary doses of sulphapyridine, compare favourably with those of all three previous series The case-fatality rate of 2 1% in the sulphathiazole series is actually the lowest yet obtained in this hospital In assessing these figures some regard should be had to the relative mildness of post-epidemic as compared with epidemic cases and also to the fact that our technique has improved as experience of chemotherapy has matured Sulphathiazole has not yet been tested under epidemic conditions Nevertheless, it has already given satisfactory results in some very severe cases, such as cases 4 and 5 below The single case in which it failed was a fulminating one with early and absolute coma similar to those which so often proved fatal during the epidemic period, when sulphapyridine was the drug employed Taking all things into consideration, I regard sulphathiazole as the most satisfactory drug which I have so far used in meningococcal meningitis

DOSAGE AND TOXICITY

I followed the dosage scheme which I originally adopted for sulphanilamide and later for sulphapyridine in the treatment of meningococcal meningitis

Age group	Under 2	2–5	5–10	10–15	Over 15
Daily dose (g)	3	4½	6	7½	9

This scheme was maintained for an initial period of two to three days according to severity, then two-thirds of the dose was given for two days and finally one-third for a further two days The period of administration is six to seven days and the total amount of the drug given is 10–50 g for an adult The drug is given four-hourly during the initial period and thereafter four- or six urly according to convenience. The first or "loading" se is ¼ g higher than the average dose for a child cept an infant under six months) and ½ g higher for adult In all severe cases, especially those in coma, ose who cannot or will not swallow, and those who are miting, the drug should be given intravenously for e or two doses and thereafter by mouth or stomach-be The 5% sodium solution may be given intra-uscularly if intravenous injection is impracticable trathecal injection should never be given, the solution dangerously irritating A dose of 20 c cm (1 g) of e sodium solution given intravenously is usually fficient for an adult, 40 c cm may be given in a very vere case For a young child or infant 10 c cm (½ g) ffices The external jugular vein is a convenient site r injection in infants

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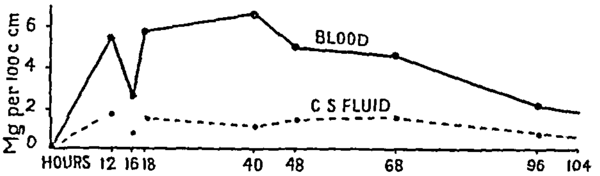
CONCENTRATION OF SULPHATHIAZOLE IN BLOOD AND C S F

It is apparent from these results that sulphathiazole is an effective drug in cerebrospinal fever, yet the concentration of the drug in the C S F is much lower for a given dose than that of sulphanilamide and somewhat lower than that of sulphapyridine Even in the blood-stream, concentrations higher than 6 or 7 mg per 100 c cm are rarely obtained owing to the rapidity of absorption and excretion The concentration curve in the C S F does not follow that in the blood, but flattens out as the blood-concentration rises, so that it seldom rises above 1 5 mg per 100 c cm Only in one patient, a lad of eighteen, was the concentration in the C S F as high as 3 1 mg When the concentration in the blood is at its highest the value in the C S F is only about 15% of that in the blood In the early and late stages of the period of administration, however, the concentration in the C S F may reach as high as 40% of that in the blood



The graph given here is a composite one representing a simultaneous blood and C S F estimation in 8 different patients of widely different ages and at different times after the beginning of treatment Care has been taken to eliminate any cases in which the previous administration of sulphapyridine might invalidate the result The ages of the 8 patients represented in the successive estimations were 15, 50, 15, 54, 8, 3, 19 and 35

Table III gives the concentrations in the C S F of 15 other cases in different age-groups All cases represented in the graph and table were treated according to the standard dosage scheme, with its much higher dosage in proportion to body-weight at the younger ages Nevertheless this factor appears to have had little influence on the concentrations in the C S F In the 15 cases the average concentrations in the C S F after the beginning of treatment were at 18 hours 0 8 mg , at 36–40 hours 1 05 mg , at 48–60 hours 1 29 mg , at 96 hours or later 0 5 mg per 100 c cm

TABLE III—CONCENTRATION OF SULPHATHIAZOLE IN C S F IN MG PER 100 C CM

Age group (years)	Cases	Hours after treatment began—			
		18	36–40	48–60	96 +
1–3	4	0 5 1 0	—	1 6	0 6 0 5
6–7	2	—	—	—	0 6 0 3
17–19	2	—	0 83	—	0 5
21	1	—	2 0	1 7	tr
28–41	6	0 9	0 7 0 9 0 85	1 1 0 78	—
Average 15 cases		0 8	1 05	1 29	0 5

Every one of the cases represented in the graph and table recovered rapidly Accordingly it appears that relatively low concentrations in the C S F, varying from 0 8 to 1 3 mg per 100 c cm in the first three days, are effective It would be unwise, however, to use these data to justify any reduction in the dosage during the initial period

COURSE OF THE DISEASE WITH SULPHATHIAZOLE

Except for 2 or 3 very severe cases recovery was ra Patients were comfortable and rational within twe- four hours, and children were often found sitting up bed within this period After the first lumbar punct in many cases the C S F was not examined again, experience has shown lumbar puncture to be unnece for treatment, except in rare instances where slow p or respirations or great restlessness and headache indic high pressure in the fluid However, 46 specimen C S F were examined within forty-eight hours after t diagnostic lumbar puncture had shown meningococci t be present Of these, 5 specimens were taken with twelve hours, all of which were free from organism 23 were taken from twelve to twenty-four hours af diagnostic puncture, and of these only 6 showed meningococci in films, with no growth on culture, 11 specime were taken between thirty-six and forty-eight hours aft diagnostic puncture and all except one were not only fr from organisms but showed a great reduction in the cel count and a considerable percentage of mononuclears already present This suggests that bacteriostasis w effected within twenty-four hours, that, in the gre majority, phagocytosis of free organisms had also tak place within this period, and that within forty eigh hours the process of absorption of the exudate was we advanced

The following are examples of very severe cases successfully treated with sulphathiazole

CASE 4 —A male infant of four months had been vaccinat a fortnight before admission and had been nightly to a publ shelter Severe illness began forty eight hours befo admission On admission, on Dec 3, 1940, the infant was suffering from both severe meningococcal meningitis and acute pneumonia He was cyanosed, the alæ nasi were moving freely and respirations were rapid and grunting Th temperature was 96° F on admission (a collapse temperature which later rose to 101° F), pulse rate about 160, almo uncountable, and respirations 70 Sticky râles all over che and over the right lower lobe dullness to percussion and coar moist râles The skin showed a few petechial spots on trunk and thighs The neck was rigid Lumbar puncture produced a few c cm of creamy purulent fluid, containing 53,8 cells per c mm and meningococci in films and culture (group I) His condition was desperate and he was given at once 10 c cm (0 5 g) of the solution of sodium sulphathiaz into the jugular vein and put into an oxygen tent, whence h was removed for feeding every two hours One tablet of th drug (0 5 g) was given by mouth four hourly for four day and then gradually reduced Improvement was very gradual He remained in the oxygen tent for seven days His temperature settled to normal in ten days Pulse rate remained abo 160 and respirations 70 for four days and then gradually slowed His chest was clear of gross signs within four day but some bronchitis remained for two weeks On Dec 1 a blood count showed secondary anæmia, Hb 62%, and a leucocytosis of 15,100, with 55% polymorphs His an was treated and he was soon quite well It was not po to determine the infecting organism of the pneumonia Sulphathiazole was evidently effective, however, against both meningeal and pulmonary infections in an infant who condition on admission was well nigh desperate

CASE 5 —A girl of 15 had about twelve hours' malaise before the onset of intense headache and vomiting Four hours later she was delirious and comatose, the coma rapidly becoming absolute She was admitted to a general hospital at one of the most intense periods of the bombing of London and received at once 1 g of sulphapyridine intramuscularly, but received no further drug treatment until she was tran- ferred to Park Hospital twenty seven hours later, on Sept 2 She was then in absolute coma and totally unable to swallow, mouth and tongue were dry and dirty , skin dry , dehydrated neck rigid but otherwise general flaccidity Abdominal reflexes absent Left sixth cranial nerve paresis The C S F was very purulent and contained meningococci of group I in films and culture Immediate treatment was 2 g sulphathiazole (40 c cm of 5% sodium solution) intravenously followed in two hours by 1 5 g by mouth and then 1 5 g four hourly Fluids and drug were given freely by stomach tube and continuous drip rectal saline was also given Next day she was still in absolute coma and unable to swallow, moist sounds at the bases of lungs , C S F contained 17,00 ls but no organisms Coma still absolute on Sept 27, she is unable to swallow but was now beginning to show a ght response to stimuli, loose cough present, fluids and ug had been given by tube for forty eight hours Next y there was definite improvement, she did not speak but is able to swallow, left and right sixth nerve paresis, more vere on the left, blurring of the margins of optic discs and ght papillœdema On Oct 3 C S F contained 24 cells per mm and no organisms Next day papillœdema had dis ppeared Thereafter her progress was rapid She was scharged well except for left internal squint on Nov 4

Convalescence was so rapid that almost all patients xcept those with arthritis or deafness were discharged ithin three weeks of admission, some in just over two eeks On discharge it was noted that the tendon flexes, particularly knee- and ankle-jerks were as a rule ill exaggerated and the C S F might contain up to 0 or 15 lymphocytes per c mm There were no clinical isabilities, except in the complicated cases These ccasionally showed slight residual paresis of the sixth nd seventh nerves some joint stiffness in certain cases f arthritis, and the deafness already referred to

The management of cases on sulphathiazole treatment , relatively easy owing to the comparative absence of oxic effects Vomiting produced by sulphapyridine was enerally checked when the drug was changed to sulphahiazole If vomiting does occur the tablets should be epeated and if it persists the sodium solution should be njected intravenously in place of treatment by mouth One or more intravenous injections should also be given o every severe case

PROGNOSIS

Tables I and II show that the age-groups with the worst rognosis are still under a year and over forty, though his feature is not nearly so clear-cut as in the days of erum therapy When chemotherapy is adequately pplied the determining factor in prognosis appears to e the fulminating type with or without adrenal æmorrhage This may occur at all ages but is probably ost frequent in infancy, as was actually seen during he 1940 epidemic In elderly subjects a secondary actor of some importance in prognosis is intercurrent rganic disease The prognosis in elderly subjects, however is now immensely improved Of 29 cases over orty treated during 1940 there were only 2 deaths, one fulminating case and the other due to hypostatic neumonia in a man aged seventy-four

SUMMARY

In the post-epidemic period of 1940, 96 consecutive cases of cerebrospinal fever were treated with 2 deaths In 52 cases sulphathiazole was used after one or more preliminary doses of sulphapyridine, and in 44 cases sulphathiazole was used alone The fatality-rate of cases treated mainly or wholly with sulphathiazole was 2 1%, which compares favourably with previous series treated with serum and sulphanilamide and with sulphanilamide or sulphapyridine alone or combined

Sulphathiazole, though not yet tested in epidemic conditions, has rapidly cured some very acute cases The evidence so far suggests that it is at least equal in potency to sulphapyridine in meningococcal disease There is evidence that, with adequate dosage, bacteriostasis is complete and phagocytosis advanced within twelve to twenty-four hours

Concentration in the C S F varies from about 15 to 40% of that in the blood, and rarely is greater than 1 5 mg per 100 c cm even on high dosage

The comparative rarity of nausea vomiting and dehydration, and the absence of depression and mental confusion, make the treatment with sulphathiazole more pleasant, and the management of the case easier than with sulphapyridine Other toxic effects are also rare High dosage is well tolerated

One or two intravenous injections of the 5% sodium solution are recommended in all severe cases and where vomiting persists

I have to thank Messrs May and Baker for supplies of tablets of Thiazamide and of ampoules of the 5% sodium solution of M & B 760, and Messrs Ciba for supplies of tablets of Ciba 3714 and relevant foreign literature Thanks are also due to the medical superintendents of the L C C general hospitals for their cooperation in transferring cases promptly, and to many members of my medical and nursing staff for their assistance The pathological and biochemical work was done at the Southern Group Laboratory by Dr J E McCartney and Dr E M Young The medical officer of health of the London County Council has kindly granted permission for the publication of this paper, for which the council accepts no responsibility

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TREATMENT OF WAR NEUROSIS

BY

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(*From an E M S neurological unit*)

SINCE the beginning of the war over 1500 cases of neurosis or psychosis in members of the armed forces have been treated in this hospital and the more important conclusions drawn from this experience may be of use to those dealing with similar problems[1]

The cases have ranged from the extremely chronic to the most acute In the early months of the war they consisted largely of men who, had all the facts been known, would never have been regarded as fit for military service—mental defectives, epileptics and the chronically anxious or hysterical—who had broken down at once under the stress of active-service conditions and removal from home They included a large number of the constitutionally abnormal, but most of them were *not* openly concerned to make the most of their symptoms With the onset of violent fighting and at the evacuation from Dunkirk different types of case began to appear—acute anxiety or exhaustion syndromes in men of comparatively normal personality, who had not broken down until placed under considerable strain In these the prospects of treatment were good, and most of them could be returned to the Army in capacities where the strain was not likely to reach the same level again Since then cases of a third type have appeared in men who have broken down under aerial bombardment in this country The strain experienced has never reached the intensity endured in the Dunkirk episode, and it is not surprising to find that these patients are of feebler stamina, and that the constitutional element was once again well to the fore What has been surprising, however is that hysterical mechanisms have been much more superficial in many of them, and in a few have almost reached the level of open malingering, to others even the most cautious psychiatrist might be tempted to apply the term "scrimshanker" It may be that these men breaking down at a later stage in the war, and being less obviously unfit for service, feel that they must bolster up their illness with adventitious aid, or rather, perhaps evade further unpleasant necessity by refusing to consider the possibility of natural recovery

THE AIM OF TREATMENT

With the neurotic war casualty, to a much greater extent than with the private patient of peace-time, treatment has to be limited by practical possibilities We hold, contrary to some that it is impossible by psychotherapy to reconstitute the make-up of the personality, that the neurotic cannot be freed of his neurotic tendencies In any case, radical psychotherapy is out of the question in war conditions, if only because of the time required increase in deafness following cerebrospinal fever in the last few years is probably a result of the high proportion of recoveries now being obtained by chemotherapy A follow-up scheme should now be instituted to ensure for the affected children facilities for special education and training, and for the adults training in lip-reading

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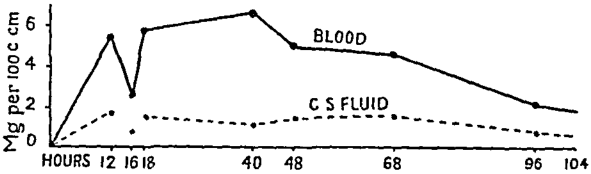
[1] Apart from a proportion of very acute cases our material closely resembles both diagnostically and prognostically the Naval material analysed by Desmond Curran and W P Mallinson (*Lancet* 1940, 2, 738)

CONCENTRATION OF SULPHATHIAZOLE IN BLOOD AND C S F

It is apparent from these results that sulphathiazole is an effective drug in cerebrospinal fever, yet the concentration of the drug in the C S F is much lower for a given dose than that of sulphanilamide and somewhat lower than that of sulphapyridine Even in the blood-stream, concentrations higher than 6 or 7 mg per 100 c cm are rarely obtained owing to the rapidity of absorption and excretion The concentration curve in the C S F does not follow that in the blood, but flattens out as the blood-concentration rises, so that it seldom rises above 1 5 mg per 100 c cm Only in one patient, a lad of eighteen, was the concentration in the C S F as high as 3 1 mg When the concentration in the blood is at its highest the value in the C S F is only about 15% of that in the blood In the early and late stages of the period of administration, however, the concentration in the C S F may reach as high as 40% of that in the blood



The graph given here is a composite one representing a simultaneous blood and C S F estimation in 8 different patients of widely different ages and at different times after the beginning of treatment Care has been taken to eliminate any cases in which the previous administration of sulphapyridine might invalidate the result The ages of the 8 patients represented in the successive estimations were 15, 50, 15, 54, 8, 3, 19 and 35

Table III gives the concentrations in the C S F of 15 other cases in different age-groups All cases represented in the graph and table were treated according to the standard dosage scheme, with its much higher dosage in proportion to body-weight at the younger ages Nevertheless this factor appears to have had little influence on the concentrations in the C S F In the 15 cases the average concentrations in the C S F after the beginning of treatment were at 18 hours 0 8 mg , at 36–40 hours 1 05 mg , at 48–60 hours 1 29 mg , at 96 hours or later 0 5 mg per 100 c cm

TABLE III—CONCENTRATION OF SULPHATHIAZOLE IN C S F IN MG PER 100 C CM

Age group (years)	Cases	Hours after treatment began—			
		18	36–40	48–60	96 +
1–3	4	0 5 1 0	—	1 6	0 6 0 5
6–7	2	—	—	—	0 6 0 3
17–19	2	—	0 83	—	0 5
21	1	—	2 0	1 7	tr
28–41	6	0 9	0 7 0 9 0 85	1 1 0 78	—
Average 15 cases		0 8	1 05	1 29	0 5

Every one of the cases represented in the graph and table recovered rapidly Accordingly it appears that relatively low concentrations in the C S F , varying from 0 8 to 1 3 mg per 100 c cm in the first three days, are effective It would be unwise, however, to use these data to justify any reduction in the dosage during the initial period

COURSE OF THE DISEASE WITH SULPHATHIAZOLE

Except for 2 or 3 very severe cases recovery was ra Patients were comfortable and rational within twe- four hours, and children were often found sitting up bed within this period After the first lumbar punct in many cases the C S F was not examined again, experience has shown lumbar puncture to be unnece for treatment, except in rare instances where slow p or respirations or great restlessness and headache indic high pressure in the fluid However, 16 specimens C S F were examined within forty-eight hours after diagnostic lumbar puncture had shown meningococci be present Of these, 5 specimens were taken with twelve hours, all of which were free from organ 23 were taken from twelve to twenty-four hours a diagnostic puncture, and of these only 6 showed menin cocci in films, with no growth on culture , 11 specim were taken between thirty-six and forty-eight hours aft diagnostic puncture and all except one were not only fr from organisms but showed a great reduction in the c count and a considerable percentage of mononucle already present This suggests that bacteriostasis w effected within twenty-four hours , that, in the gre majority, phagocytosis of free organisms had also tak place within this period , and that within forty-eig hours the process of absorption of the exudate was w advanced

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PHYSICAL TREATMENT

Drug therapy of the acute neuroses has been dealt with a previous communication [2] Since that report we have ad to treat a considerable number of cases which had een acute and have now become chronic Treatment of n acute neurosis is almost as urgent as that of the acute bdomen Whether treated in hospital or not these hronic cases had received no adequate sedation in the cute phase and they had been returned to duty too soon. onversion symptoms had been allowed to persist, and arge periods of amnesia had been left untouched By he time they arrived for treatment here the neurotic eaction had become fixed and prospects of return to full uty were almost hopeless It is of the utmost importance that the acute neurotic should receive effective irst-aid as soon as he is seen

Apart from the treatment of acute panic reactions physical and biochemical methods have their place in speeding up recovery in the later stages As always the success to be expected depends on the previous personality, and good results cannot be expected from poor material In addition to sleep therapy, a modified form of insulin treatment is useful in some cases for breaking down the vicious circle of anxiety and loss of weight Increasing doses of insulin are given in the mornings up to a maximum insufficient to produce coma or hypoglycæmic excitement, followed three hours later by 12 oz of potatoes or 7 oz of sugar The treatment is without any of the risks associated with insulin coma and generally produces a rapid gain in weight and improvement in physical condition Furthermore, the insulin often exercises a sedative effect which may last for the whole period between administration and interruption

Full psychological recovery is rare without the restoration of good physical health The mere appearance of physical fitness is often deceptive and on inquiry remarkable changes in physique will often be found including loss of weight up to 2 or 3 stone In all forms of drug therapy the aim should be by a large intake of fluid and food, not only to abolish the anxiety but also to remedy the metabolic disturbances due to and conducing to, its continuation. Only when his normal physique is restored is the patient fully accessible to psychotherapy id rehabilitation

OCCUPATIONAL THERAPY

The occupational technique worked out at this hospital is been described by Cameron [3] Occupation is even ore valuable for the sub-chronic than for the acute eurotic, and for a stabilised return to a normal working vil life it is almost indispensable Its value as a straction from neurotic preoccupations can be used en during the operation of stress. Our patients were uch better when kept at work during air-raids than hen allowed to congregate in cover-points and places greater security When allowed to seek the greatest vailable security the men became preoccupied solely ith the desire of finding a Utopia where they would *feel* ife and from spending nights in open trenches the more anicky took to breaking bounds in order to sleep in ublic shelters Such breakdown of control has its enalty in heightened anxiety, and the remedy is to deal y sedation with the subjective fears which, rather than ie real dangers are the effective noxus

MEDICAL BOARDING

The problems of necessity for boarding and proper oarding category should be faced as early as possible for hey inevitably influence the line that treatment itself will ake. If invaliding is indicated the desire of the patient o evade further military service can be used to aid ecovery rather than to perpetuate illness, he can be old for instance, that he will be recommended for lischarge, but only when he has recovered from his symptoms A healthy civilian is of more value to the country than a sick soldier Problems of boarding have been more difficult of late, for now the position of the man boarded "C" is not much easier than that of one still marked "A" [4] We have found that men passed suitable for service not involving strain have been sent to guard points subjected to heavy bombing, which has promptly precipitated a new breakdown Suitable employment within the Army framework is difficult to find, even for the neurotic of fairly good personality; and mistakes are costly These tragedies would be fewer if the vocational recommendations of the psychiatrist had any force

We do not believe that invaliding out if done carefully will greatly add to the number of neurotic casualties or that there is any risk of an epidemic of neuroses Certainly the prompt removal of the constitutionally unfit from the Army aids its efficiency and obviates much chronic invalidism Since there are at present no pensions for war neurosis it is important that the neurotic should be re-adapted to a working life before the question of pension arises and owing to conditions in the labour market this is much easier now than it will be when peace comes After this war the country must not be burdened with the large numbers of pensioners that crowded psychiatric clinics and Government hospitals for many years after the last war who are indeed, still with us A proper settling of the questions of attributability is still awaited, but when the time for this arrives it is to be hoped that the authorities will not lose sight of the malignant influence that the award of a premium for illness exercises on the neurotically predisposed

SUMMARY

The principal conclusions derived from the investigation of a large number of military neurotic casualties are :—

1. The nature of the material admitted to hospital varies with the progress of the war and with the different types of strain that war from time to time imposes Similar variations can be expected in the future

2 At times large numbers of cases will be seen in which there is a semi-deliberate magnification of symptoms

3 Treatment has to be adapted to what is possible in a short space of time It should not be aimed too high

4 Psychotherapy is faced with unusual difficulties in war-service cases Both from the structural and therapeutic points of view they closely resemble with specific differences, unsettled compensation cases of peace-time Quick abreactive techniques have a special value Special problems are offered by cases with aggressive tendencies and those arising after head injury

5 Medical first-aid is of the utmost importance Physical methods of treatment are very useful, and should have as a principal aim restoration of normal metabolism

6 Occupational therapy is also valuable even more for chronic than for acute cases

7. Over-optimism is to be avoided, and too much resistance should not be offered to invaliding the patient The constitutionally unfit must be weeded out of the Army, and for his own sake the unfit soldier should be returned to civilian life fit for work as early as possible

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[2] Sargant, W and Slater E. *Lancet* 1940 2 1

[3] Cameron K. *Ibid* p 659

[4] Roughly speaking categorisation as A signifies that the soldier is fit for all duties as B that he is fit for all duties within limits (e g that he should not be submitted to great strain and exposure) and as C that he is fit for home service only

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The Minister of Health on Jan 17 in a broadcast appeal to nurses said that now during the coldest winter months was the time for those who have had training and experience in fever and tuberculosis nursing to give their special help to the nation. We needed fever fighters as well as fire-fighters Nurses who were employed in any branch of the public health services should stay where they were but fever nurses who were employed in some other form of nursing should speak to their matron and write to him at the ministry or to the Secretary of State for Scotland at St Andrews House, Edinburgh. Members of the Civil Nursing Reserve who were unemployed at the moment would be temporarily released from their obligations if they were needed in the epidemic season.

Treatment has three practical goals to deal with the symptoms and to bring about a return to the condition before the breakdown, to re-adapt the patient to a socially valuable life, and so to arrange his future that strains that are for him intolerable will not have to be endured again If this can be done within the framework of Army life, so much the better, if not there must be an effective re-adaptation for civilian life The Army is not organised to provide a shelter for neurotics, and neurotic casualties throw more grit into the machinery than a corresponding number of organic casualties It is no good sending back into the Army, merely because he is symptom-free, a man who is liable to break down under small strain It is necessary, by accurate history-taking and a quantitative as well as qualitative diagnosis, to make an assessment of the personality and of the strains that it is and is not able to support Judgment is more likely to err towards optimism than in the opposite direction, for there is a natural bias against invaliding any man unless it is absolutely necessary Each one of us has seen return cases of men who had been sent out fit for home service and had unexpectedly proved unfit even for that They had gone to their units, had spent weeks on light duty or no duty at all, no-one knowing what to do with them, and had caused great trouble and difficulty before they were finally returned to hospital, disgruntled and resentful The longer a neurotic reaction is allowed to persist the more difficult it is to deal with, among the neurotically predisposed, emotional attitudes such as disgruntlement, panic, or scrimshanking are highly infectious Every consideration urges, therefore that if treatment is to be effective it must be quick, and limited to an aim that is quickly obtainable

PSYCHOTHERAPY

Psychotherapists will agree that the most important factor for the success of treatment is a real desire on the patient's part to get well, even when that involves a degree of sacrifice and a painful self-realisation The reward is a greater freedom from hampering difficulties, a greater capacity for enjoyment and a knowledge and acceptance of those fundamental circumstances which are incapable of change The military case, however, differs from that of peace time in that treatment encounters the same difficulties but does not offer the same reward, and that illness can secure a fundamental change in life, which is not otherwise to be obtained The soldier is uprooted from an environment to which after years of painful endeavour he has made some sort of adjustment, even if a neurotic one, he is forced through a military mill and subjected to previously unimagined strains Then, when illness comes, it may be weeks or months before even the possibility of treatment is reached By the time he reaches the psychiatrist he is a man with a grievance, sullen or apathetic And all the reward that is offered for cure is, to his mind, the privilege of returning to the scene of his failure in the knowledge that he has failed

Treatment, then, is faced with unusual difficulties, and must be pragmatic In late and less favourable cases it is wise to limit its aim to getting the patient well enough to return to his job as a civilian The patient is best told that he will be recommended for discharge, and an attempt is made to show him that his grievances are understood, and to remedy any sense of failure or worthlessness he may have acquired He needs to be assured that he can serve his country equally well as a civilian, and there are few who are not eager to accept this point of view Most of those who have broken down after little or no strictly military stress have to be so treated, and so have veterans of the last war, of whom significantly many have a history of previous "shell-shock" There is more hope for those whose breakdown has been precipitated by promotion or by the conflict over putting in for it, but care must be exercised here, as a seemingly situational neurosis may be firmly rooted in the personality

AMNESIAS

In the acute war neuroses there is a considerable tendency to spontaneous recovery But even if acute symptoms abate, an effort should be made to clear up amnesias and to let the patient re-experience the violent emotions that battle scenes have aroused This process —abreaction—has a prophylactic as well as an immediate therapeutic effect It may be induced by various me according to taste and experience The slow intraven administration of a suitable narcotic (such as sodi amytal gr 5–7½) is quick, effective, and of partic use to those unversed in hypnotic and analytic techniques Before it is begun a good rapport must be established and cooperation gained The patient should be told that certain painful memories are buried in his mind and are responsible for his symptoms, and that he will get better when they are dealt with The abreaction under the drug may be sudden and violent, in which case it is essential to give the patient time to weather the emotional storm, and to help him by an attitude of understanding and detachment At other times it may be necessary to use firm and persistent questioning to overcome resistance Sometimes actual memories are falsified by or mixed with fantasies, this may be made use of in subsequent interviews in giving the patient insight into the deeper causes of his anxiety Other varieties of behaviour under narcosis have been observed Tremors, stammers and other conversion symptoms usually disappear under the drug, and an attempt should be made by suitable suggestion, and by continuing the interview until the patient is fully conscious, to prolong the improvement into the waking state Though much may be done in one session, it is nearly always necessary to cover the ground again, exploring deeper into obscure episodes, laying bare amnesias previously unsuspected relating specific anxieties to the forgotten events and familiarising the patient with the emotion he has suppressed

The psychopathology of war neuroses is more complex than has been described by some writers who gained their experience in the last war Apart from the nature of the precipitating agent, the structure of the cases seen so far especially late cases with much anxiety and depression has resembled that of the occupation and post-traumatic neuroses of peace Differences are shown in the striking regressions that often follow being oneself, or seeing others, blown up, and in the temporary disturbance to the sense of reality caused by the bizarre effects of high explosive The most fantastic dreams are suddenly realised, as though by magic, in actual life, and the mind regresses to primitive mechanisms appropriate to the time of life when such fantasies seemed real The experiences of war provide a stimulus to aggressive and sadistic impulses, with the consequence that guilt and its associated depressive affect are very common, or projection mechanisms may come into play, the man believing that every 'plane is coming specially to punish him The therapeutic aim is then to make him aware of latent hostilities, to give him an opportunity of expressing them in a reasonable way, and to increase his confidence in his powers of control

HOSTILITY

Special problems are offered by the patients who show a marked hostility during treatment in hospital The aggressive reaction may be that of a constitutionally unstable personality to an unfamiliar environment These men have been social misfits all their lives, and their neurosis is the expression of failure to adapt to the Army, their asocial activities in hospital are usually childish, they defy discipline, or break bounds without reasonable gain—behaviour which is difficult to deal with, and has a bad effect on others of better personality As the prospect of a useful Army career is usually minimal, it is well to secure their discharge at the earliest possible moment, and to give them priority when it comes to boarding Aggressive reactions with a paranoid tendency are also seen in men of comparatively good personality with acute anxiety state, usually during recovery from the acute stage of the illness The phenomenon is part of the illness, and is to be treated as such In many of our cases it could be regarded as an over-compensation for loss of self-esteem, as the meaning of the illness became clear

Cases complicated by an organic factor offer special problems Neurosis commonly follows a post-concussive state and it is important to decide how far the influence of the injury extends It is harmful to keep patient in bed for more than two or three weeks in an attempt to prevent post-concussive headaches, the subsequent illness is more prolonged It is well to acknowledge that headaches do occur after concussion, but to make little various species of laboratory animal have shown that fferent animals vary in their susceptibility to blast d that animals exposed close to an explosion suffer ore than those further away Small mammals like bbits are usually killed instantaneously at excess essures greater than 50 lb per sq in At higher essures close to the explosion they would be blown to eces while at slightly lower pressures they survive for a ief period their symptoms during the interval they ve after exposure usually including dyspnœa and chypnœa Blood-stained froth is also occasionally esent in the upper respiratory passages of such imals while knee-jerks corneal and pupillary reflexes e normal immediately after an explosion Animals xposed to slightly lower pressures do not die and xternally appear to be unaffected by the explosion nternally, however they exhibit changes in thoracic nd occasionally abdominal organs At still lower ressures (e g excess pressures of 5 lb per sq in) nimals are affected neither externally nor internally

The most outstanding lesions are hæmorrhages vary-ng in extent on the surface and in the substance of the ngs When animals have been exposed to minor egrees of pressure lesions are slight. whereas the lungs f animals exposed to high pressures may be one mass of æmorrhage Lacerations are also found The lesions re detectable radiologically. and they clear up fairly apidly Hæmorrhagic lesions are also occasionally bserved in the thymus in the pericardium and epicardium In about 40% of cases in which pulmonary æmorrhages occur hæmorrhagic lesions are also found n abdominal organs The most susceptible abdominal rgan is the large intestine Hæmorrhages (and ccasionally lacerations) have also been observed in the mall intestine and stomach the liver the spleen the idney the adrenals the bladder and the uterus while etroperitoneal as well as intraperitoneal hæmorrhage may sometimes be present In the head hæmorrhages have been observed in the fascial planes of the orbital cavity and at high pressures the ear-drums may be ruptured The central nervous system appears to be affected only at relatively very high pressures No lesions have been observed in the brains of monkeys which however show hæmorrhages around the spinal roots, especially in the thoracic region A zone of œdema around the central canal is also generally observed in monkeys exposed to high blast pressures In rabbits the nervous system appears to be more sensitive than in monkeys and apart from spinal-cord changes pial and ventricular hæmorrhages have occasionally been observed on and in the brain of these animals

Experiment has shown that the pulmonary and abdominal lesions are due to the impact on the body wall of the pressure component of the blast wave Thus animals exposed to explosions so that one side shields the other receive lesions only on the side facing the explosion . while animals whose body walls are clothed in a sufficient thickness of sponge rubber are far less injured internally than are controls The unilateral disposition of the lesions according to the circumstances of exposure argues against any theory which postulates that the lesions are due to some general effect—for example to pressure changes occurring by way of the upper respiratory tract Observation has also shown that fat emboli are not present in the lungs of animals killed by blast, and that the lesions cannot be attributed to back pressure in the pulmonary circuit even though such pressure does cause hæmorrhages which in some respects are similar to those caused by blast The pulmonary and abdominal injuries due to blast may thus be compared with those which occur without open wounds as a result of severe falls or direct blows to the body wall

Turning to the clinical aspects Professor Zuckerman pointed out that in air-raids people are exposed not only to the direct effects of blast but also to indirect effects such as violent displacement secondary missiles and falling masonry A specially conducted casualty survey has shown that the direct effects of blast such as have been observed experimentally are experienced only close to an explosion, and it follows that relatively few people who have been injured in air-raids can have been exposed in circumstances where they would have received primary blast injuries Pulmonary hæmorrhages cannot be regarded as an exclusive sign of primary blast injury which can only be diagnosed when the full circumstances of injury are known Cases that have been described as primary blast effects may indeed have been due to such secondary blast effects as violent falls or the impact of flying masonry

He gave examples of people who had been killed by the direct effects of blast of people whose death was due either to a combination of primary and secondary effects or to secondary effects alone and of people who had received non-fatal internal injuries as a result of the impact of a blast wave Physical signs are not prominent in such cases which are however detectable radiologically In making diagnoses of blast injuries Professor Zuckerman suggested that attention should be paid to the condition of the ear-drums which would probably be ruptured at the higher blast pressures that cause lung injuries

Prof **Geoffrey Hadfield** reported on 30 post-mortem examinations that had been carried out on victims of air-raids In some 8 of these there were no significant external injuries and in 4 pulmonary hæmorrhages were associated with a high degree of carbon-monoxide saturation of the blood Of the 30 2 had died of compression asphyxia and 3 from asphyxia due to the inhalation of the dust of debris 22 showed pulmonary hæmorrhages which were rarely marked on the surface and which were sometimes extensive within the substance of the lungs Rupture of alveolar walls was not a prominent microscopic finding and as a rule alveoli filled with blood had intact walls The primary lesion in these cases was he felt a widespread dilatation and congestion of the alveolar capillaries from which diapedesis probably occurred into the alveoli His observations suggested that hæmorrhagic lesions are usually more extensive in people who do not die immediately than in people who are killed . and he felt that bleeding may continue into the lung for at least 48 hours after exposure to blast causing consolidation of large areas Consolidation is often associated with leucocytic and monocytic infiltration Professor Hadfield pointed out that his remarks were founded on what he described as a very short experience and in view of Professor Zuckerman s observations about the similarity of internal injuries due to blast and those due to violent falls or the impact of falling or flying masonry he did not claim that the cases he described were due to the direct effects of blast There is little opportunity for obtaining suitable material for investigation, and it is therefore difficult to sort cases and disentangle the incident The observation that bleeding into the lung may continue for days is he felt significant since it means that patients with symptoms suggestive of lung injury should be kept immobile and treated as for hæmoptysis

Dr J N O **Reilly** described 3 non-fatal cases which he had treated and emphasised that within a very short period they had become apparently ordinary clinical lobar pneumonia In 5 other patients who were brought in from the same incident the appearances were those of an acute abdominal catastrophe In 2 of them symptoms were sufficiently pronounced to justify surgical intervention but nothing was found at operation except a few minute subserous hæmorrhages. Dr J M **Alston** inquired whether animals which survived exposure to blast manifested signs of pseudopneumonia similar to those described by Professor Hadfield in humans and Dr **Beryl Barsby** referred to 2 air-raid casualties whom she had treated and in whom internal injuries including a spontaneous hæmothorax appeared to be due to blast

In replying Professor **Zuckerman** remarked that although hæmorrhagic lesions in the lungs often appeared to be better demarcated in animals which survived than in animals immediately killed by blast there was no evidence that the bleeding continued in the sense of an extension of primary zones of hæmorrhage Consolidation of the lungs associated with leucocytic and monocytic infiltration had been observed in animals and appeared to be similar to the changes described by Professor Hadfield In conclusion. he re-emphasised the point that without knowing in detail how a casualty had been injured in an air-raid it was impossible to decide whether lung damage was due to the primary or secondary effects of blast. or to a combination of both

A PNEUMOCOCCUS WHICH REQUIRED CO_2 FOR ITS GROWTH

By Alexander Fleming, M B Lond , F R C S
PROFESSOR OF BACTERIOLOGY IN THE UNIVERSITY OF LONDON AT ST MARY'S HOSPITAL

At this season many bacteriological examinations are being made in connexion with respiratory catarrhs, and in the light of the experience here detailed it seems possible that certain important organisms may be completely missed by ordinary methods of culture

A laboratory worker contracted a “cold” The original clear discharge from the nose had by the fourth day become very profuse and mucopurulent A casual examination of a gram-stained film of this discharge showed many capsulated diplococci, but cultures made on blood agar and on boiled blood agar gave a pure growth of *Bacillus influenzæ* (Pfeiffer) The next day a fresh sample of mucopus was examined microscopically with greater care, and in addition to capsulated gram-positive diplococci many small gram-negative bacilli resembling *B influenzæ* were observed Cultures on blood and boiled blood agar again gave pure growths of *B influenzæ* These examinations were repeated on the next two days with exactly the same results

The position, therefore, was that in the nasal pus there was a heavy infection of what appeared to be a pneumococcus, which had on four separate occasions refused to grow on a culture medium which should have been suitable (5% horse-blood agar) At this stage I remembered having been informed by Dr Gleeson White at a demonstration given at a laboratory meeting of the pathological section of the Royal Society of Medicine that some pneumococci required for their growth an atmosphere containing an increased amount of CO_2 I therefore planted the nasal pus on two blood plates, one of which was incubated in the ordinary way, and the other in an atmosphere containing roughly 10% of CO_2 The plate incubated without CO_2 again gave a pure culture of *B influenzæ*, whereas on the plate grown with CO_2 there were in addition numerous large mucoid colonies of pneumococcus which proved to be of type III The same procedure was repeated five times during the next week, always with the same result These results clearly show that there are pneumococci which do not appear in culture on blood agar unless an increased amount of CO_2 is present in the atmosphere

The method used for growing the organism in CO_2 was very simple The container was a metal can with a “push in” lid wide enough to hold the culture plates, and with a total capacity of about 2 litres The inoculated plates were placed in the can, CO_2 was run in from a Kipp's apparatus, and the lid firmly replaced, but not sealed in any way On different occasions amounts of CO_2 from about 100 c cm to 300 c cm were added, and with all there was the same copious growth of the pneumococcus There is, therefore, considerable latitude in the amount of CO_2 which may be added

The pneumococcus was subcultured daily on blood agar slopes which were incubated in air and in air plus CO_2 For the first three days there was no growth without increased CO_2 in the atmosphere The fourth subculture grew (badly) in air, the fifth better and the sixth grew equally with and without added CO_2 The first four of these subcultures were, of necessity, made from the culture grown in CO_2 The remaining ones were made from the cultures obtained in ordinary air

The colonies obtained in CO_2 from the original muco pus did not differ in any perceptible way from ordinary type III pneumococcus colonies When the organism was acclimatised after six subcultures the colonies in ordinary air were perfectly normal type III colonies

This series of observations is striking in that on ten separate occasions the pneumococcus which could be seen in nasal pus failed to grow on blood agar when incubated in the ordinary way, but grew well when CO_2 was added in every one of six trials In clinical bacteriology it is the custom to examine films of nasal secretion or sputum when such are sent to the laboratory, and thus the cultural results are checked It is not, however, so common for postnasal or throat *swabs* to be examined microscopically and if this is not done there may be a pneumococcus (or other organism) which will not grow except when CO_2 is added, and such an organism wo be completely missed, even if it were the most importa part of the infection

A number of postnasal swabs have been cultured blood-agar plates with and without added CO_2, and in case was an organism found which grew less luxuriant in an atmosphere of 5–10% of CO_2 It might, therefo be an advantage to incubate all cultures from th respiratory tract in this way The technique is easy a does not involve any serious expenditure All that wanted is a reservoir of CO_2 (a Kipp's apparatus, or cylinder of the gas) and a metal can of suitable (such cans are used as containers of children's foods a other things) The CO_2 reservoir can even be done aw with by adopting the procedure described by Glad and Fildes[1] (1940)

The observation that some pneumococci will not gr unless CO_2 is added is not new I have already me tioned that Dr Gleeson White made a similar observation, and Khairat[2] found in blood-cultures certai organisms, including one pneumococcus, which gre badly or not at all unless with added CO_2 In spite of th it does not seem to be generally known among bacteriologists that these cultural requirements exist

CONCLUSIONS

The lessons to be learnt from this case are

1 The simple microscopical examination of infecte material should not be omitted If the nasal mucop from the case cited had not been examined microscopically it is likely that the profuse pure culture o *B influenzæ* would have satisfied most bacteriologi that there was a simple *B influenzæ* infection, but th examination of a gram-stained film made it at onc obvious that the culture gave a misleading picture

2 Even on what is regarded as a suitable cultur medium a common organism may fail to develop unle CO_2 is added to the atmosphere

Medical Societies

ROYAL SOCIETY OF MEDICINE

At the joint meeting of the sections of Surgery an Pathology on Jan 8, with Mr J B Hunter in the chai a discussion on the

Problem of Blast Injuries

was opened by Prof S Zuckerman who gave account of experimental work carried out by member of the Department of Human Anatomy Oxford, for th Research and Experiments Department of the Mini of Home Security It has become recognised he sai especially since the Spanish war, that the blast of hi explosives can kill or injure people without cau external injuries, in such cases the most prominen internal lesions are hæmorrhages in the lungs Simila pulmonary lesions and hæmorrhages in parts of th central nervous system and in some abdominal orga have been observed during the 1914–18 war in exper mental animals that have been exposed to blast T understand how these lesions occur it is necessar know something about the nature of blast When high explosive detonates a relatively small amount solid becomes converted almost instantaneously into very large volume of gases which by their expansi produce a blast wave in the surrounding air The wa is a single pulse of increased pressure followed by phase of suction, and it moves very rapidly, falling, the case of a medium-sized bomb, to the velocity sound (1120 ft per sec) at about 200 ft from t explosion The total duration of the whole wave at a given point is brief the pressure component close to charge seldom lasting more than 5 millisec , and t suction component about 30 millisec The maximu pressure of the wave is highest in the region of t explosion but it rapidly falls, especially at first t further the wave moves Thus excess pressure in t neighbourhood of a heavy explosion may be as much 150 lb per sq in whereas 50 ft from the bomb t excess pressure may be no more than 5 lb Experimen

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[1] Gladstone G P and Fildes P *Brit J exp Path* 1940 21, 1
[2] Khairat O *J Path Bact* 1940 50, 491

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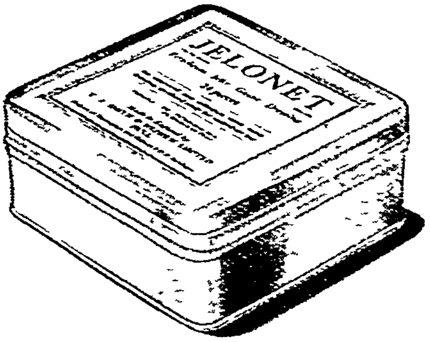

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ASSOCIATION OF CLINICAL PATHOLOGISTS

SCIENTIFIC MEETING WITH DEMONSTRATIONS

AT the Sir William Dunn School of Pathology, Oxford, on Jan 4, Prof A D GARDNER demonstrated the diagnostic work—now centred at Oxford in the Emergency Public Health Laboratory Service—on specimens of sera received from patients thought to be suffering from infection with *Leptospira icterohæmorrhagiæ* Specimens of sera from the pre-jaundice stage were wanted It might be possible, he suggested, to make an early diagnosis from the extreme weakness in the febrile stage, muscle pains, photophobia with red conjunctiva, and vomiting The work of most of the patients hitherto examined exposed them to direct infection from rats—e g , sewer men, canal hands, farm labourers and a pumper from air-raid shelters

Dr JOAN TAYLOR demonstrated the identification of the various salmonellas by preliminary cultural tests followed by serological analysis with the standard specific and group-agglutinating sera She would prefer to call these by their figure and letter constituents rather than the town or district of origin She discussed slide and tube methods of titration of agglutinogens , both, she said, were needed Craigie's use of a small inserted tube in a culture tube of " sloppy agar " often provided rapidly, from the top layer of the surrounding agar, culture of the most motile bacilli required for testing the flagellar H element

Dr A H ROBB-SMITH demonstrated the histology of lymph nodes Glands from the inguinal region were often too fibrous while those from the upper cervical chain might show a confused picture owing to former inflammation from teeth and tonsillar lesions , the best gland should be chosen by the clinical pathologist generally one from the lower cervical chain or the axilla The whole gland should be carefully excised and immediately fixed Section before fixation enabled the capsule to retract and so distort the finer details of structure sought by the pathologist in the follicles, sinuses and medulla of the gland

Dr C L COPE resumed his work on pregnandiol (LANCET, 1940, 2, 158) The absence of pregnandiol in the urine after a threatened miscarriage, he said, enabled the gynæcologist to assume with some confidence that the fœtus was dead

Captain L HANSEN described the estimation of the amounts of sulphanilamide, sulphapyridine or sulphathiazol present in the blood after their administration either orally or parenterally Difficulties arose because the same dose in different patients might yield different concentrations in the blood, or even in the same patient on different occasions The conjugated acetylated forms of the three substances were inactive Even a trace of Novocain, accidentally admitted from the needle used to the specimen, might falsify the colorimetric determination

After dinner at Oriel College a discussion took place on the regionalisation of hospitals in the future and its effect on clinical pathology Much emphasis was laid on the direct relationship that should exist between the pathologist and the patient the sending of specimens by post and the resulting divorce of the pathologist from access to the patient was deplored

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Reviews of Books

Surgery of Modern Warfare

Part 2 Edited by HAMILTON BAILEY, F R C S Edinburgh E and S Livingstone Pp 160 12*s* 6*d*

WITH the publication of part 2 " Surgery of Modern Warfare " gets fairly into its stride The chapter on skin grafting is completed and there are full accounts of the war surgery of the chest, abdomen, genito-urinary system and arteries The overlapping and contradictions which to some extent marred the value of part 1 are here nowhere in evidence A battery of experts fire their salvos with precision and effect, and Mr Hamilton Bailey is well justified in saying " What they have to say must be authoritative " For all that a contributor, however eminent, should spare us such expressions as " Plurivisceral damage augments mortality , multiregional injury determines a heavier death-roll " The chapter on wounds of the chest covers most of the ground in a short space The genito-urinary system is discussed by four authors each of whom has given us a clear and concise account of the problems involved in this branch of surgery The final chapters deal with the surgery of the arteries and include a discussion of the different types of tourniquet in common use The two chapters on the surgical approach to the arteries are stimulating The author of them has wisely assumed that the anatomist, not God, decided that the third part of the axillary artery should become the brachial artery at the lower border of the teres major , and that to describe two methods of approach to this continuous structure is superfluous Throughout, the essentially practical methods of Fiolle and Delmas have been preferred to the classical approaches described by most textbooks Thus long skin incisions are advised , the free dissection of tendons and fascia with, if necessary, resection of bone gives the operator a chance to examine carefully the exact source of the bleeding and allows him to ligature only such vessels as require it, thus saving needless sacrifice of the blood-supply to a limb which might otherwise be in danger of gangrene

Duval's approach to the first part of the anterior tibial artery and Sencert's and Henry's approaches to the first part of the subclavian artery are operations which should only be attempted by the expert working in a properly equipped theatre The first may save a limb when the more simple ligature of the popliteal artery might cause gangrene Ligature of the first part of the subclavian is a life-saving measure and these approaches should be mastered by the surgeon By the perfection of such operations our results will improve In the last chapter two problems worthy of further investigation are treated, perhaps a little too authoritatively, as settled The first relates to simultaneous ligature of the vein when the main artery to a limb is ligatured, about which there are still differences of opinion Secondly, it is advised that a limb in danger of gangrene should be kept at room temperature and not warmed, the argument being that by increasing the temperature of the limb the metabolism of the part is increased and this may be too much for a flagging circulation to control The circulation is certainly improved by warmth however and the question is whether this augmented circulation is in proportion to the increased metabolism, whether it is in excess of the demands or whether it falls short of the new metabolic requirements Fresh investigation is necessary before this extremely important point can be decided Finally, although many surgeons will not share Mr Hamilton Bailey's passion for *maggots* (a *long chapter* on which is included) most will understand his reasons for saying " I have learnt more in editing part 2 than by taking a postgraduate course visiting surgical clinics "

War Wounds and Injuries

Edited by E FLETCHER, M B Camb , M R C P , physician in the E M S and to Queen Mary s Hospital for the East End , and R W RAVEN, F R C S , surgeon in the E M S and to outpatients at the French Hospital, London London Edward Arnold and Co Pp 255 14*s*

THIS is a collection of articles on the surgery of wounds and injuries that have appeared in the *Postgraduate Medical Journal* during the first year of war It is therefore a symposium rather than a textbook, a series of essays rather than a comprehensive review Some of the contributions are written for the young general surgeon, others are more suitable for the expert The discussion on injuries of the eye and disturbances of vision which occupies sixty pages is of interest above all to the specialist On the other hand, in the chapter on war injuries of the jaw and face Cole deals with principles rather than details, and gives an insight into the problems of these important injuries that is essential to the surgeon who may have to deal with them in the front line The excellent group of papers on injuries of the chest by Roberts, Sellors Price Thomas and Alexander should be very helpful to the young war surgeon, and the slight divergence of views on hæmothorax does not detract from the value of the discussion as a whole Other contributions of real practical importance, because of their sane outlook and their emphasis on principles, are those on amputations by Seymour Barling, on the surgery of deformities by MacMurray, and on injuries of the spine and spinal cord by Knight

THE LANCET

ONDON   SATURDAY, JANUARY 25, 1941

TEACHING OF FIRST-AID

WE are beginning to see that our teaching hospitals ust become educational centres for everything con- rned with the art of healing. Evolution along those nes has developed considerably in the last fifty ars the dental school was attached to the medical hool the nursing, massage and radiographic schools veloped in turn, but nowhere has there yet arisen e complete school of healing, where all, except a few niors are learning their jobs and passing on to take o posts in other institutions. A new stage in the volution of a fully comprehensive school has been ached at Queen's Hospital, Birmingham, where a hool for training industrial workers in first-aid is to e established as part of the Accident Hospital and ehabilitation Centre primarily to meet the needs f firms not large enough to have their own trained urse or doctor. Here trainees will live in the ospital for a fortnight and act as nursing orderlies. he need for such training centres extended to meet he needs of first-aiders both inside and outside the actories is evident, for though first-aid parties are oing and have done valuable work in air-raids it can carcely be said that all is well with first-aid. Every loctor of course has his funny story of how the first- ider shouldered him out of the way, but this would ot matter if confidence and competence always went and in hand.

Training of first-aiders in England has been under- aken by the St John Ambulance Association and the British Red Cross. The first is primarily a peacetime organisation and the second, though designed for war has been chiefly active in training volunteer nurses for hospitals. The textbooks of neither were designed to meet the type of problem presented by air-raids, and the only widely circulated book written to that specific end is the A R P Handbook, No 10.[1] The result is that training of first-aid parties to meet present emergencies starts with an initial handicap of a syllabus and an examination unsuited to the needs of the moment. Medical lecturers are not devoid of blame. One at least read the book to the class without comment, another occupied half an hour of a four-hour course to wardens in explaining the psychological theory of shock; and another advising on treatment, startled his hearers by remarking "Just inject a little strychnine—you can't go wrong." Nor are these isolated instances. We can all recall lecturers, able clinicians, whose teaching ability was non existent. This is not beyond remedy, for teaching is a job with a technique that can be acquired, lecturers must realise this, and remember that the presentation of the facts is as important as the facts themselves. Those who have been teaching or examining first-aiders in recent months are well aware of the recurrent faults of candidates and of doctrine. The avidity with which tourniquets are applied, the unpadded splint hard on the malleolus, the single (proprietary) disinfectant of which they have heard the fumbling for pressure-points, the incompetent Schafer's method—how familiar they are. Most dangerous of all, perhaps, is ignorance about shock. A correspondent writes "The first candidate who knows when shock appears and that its effects can be explained from the reduction of blood-volume wins a bottle of beer or a box of chocolates—but we have not had to present a prize in two years." First-aid needs a background of sound first principles or it cannot be applied intelligently, and sometimes even the lecturer lacks the background.

How the proper training and teachers are to be obtained is not easy to answer. An M O H recently expressed the opinion[2] that it is desirable for all members of first-aid posts to be sent to casualty departments for training, and only those who can devote sufficient time to gaining this experience should be retained at the posts. On another page an account will be found of a scheme for a national school giving a fortnight's intensive course in similar fashion to the A R P schools. The proposal is attractive in many ways, but has the questionable purpose of training lay instructors. If the first-aid training now given by doctors is unsatisfactory, training given by lay instructors would scarcely be likely to improve on it. The scheme, however deserves full publicity so that its strengths and weaknesses can be gauged. In the first place is a fortnight long enough to teach anyone anything in such a way that it will stick? Those who have lectured to nurses know that it is not until the second year that facts learned in the first year become everyday equipment in the student's mind. Only by working with new knowledge over a period of time can we convert it into a familiar tool. A fortnight's course of the kind would be excellent for doctors about to teach first-aid, if they could be induced to take it. They would have both knowledge and experience already, and would need to be told only what was relevant to their purpose and how to present it. But for lay first-aiders some longer preparation is surely necessary. Possibly the student could split his fortnight's training, starting with a week of intensive study and practical experience, under supervision, in clinics and outpatient departments, then returning to his own district for six months to attend routine night or week-end classes designed to stamp in his hastily acquired knowledge and technique, and finally spending a second week at the school for revision and further practical experience before sitting for his examination. Some such system would ensure a competent standard, but first-aid is unsatisfactory at present because it is badly taught, and our first step must be to ensure that the teachers learn how and what to teach.

MANAGEMENT OF SECONDARY SHOCK

CURRENT opinion on the treatment of wound shock is expressed in the Medical Research Council memorandum[3] which says that "the most important single requirement for arresting the progressive deterioration is restoration of blood-volume." This opinion is justified by the experience of the Army Blood-transfusion Service with air-raid casualties. But the

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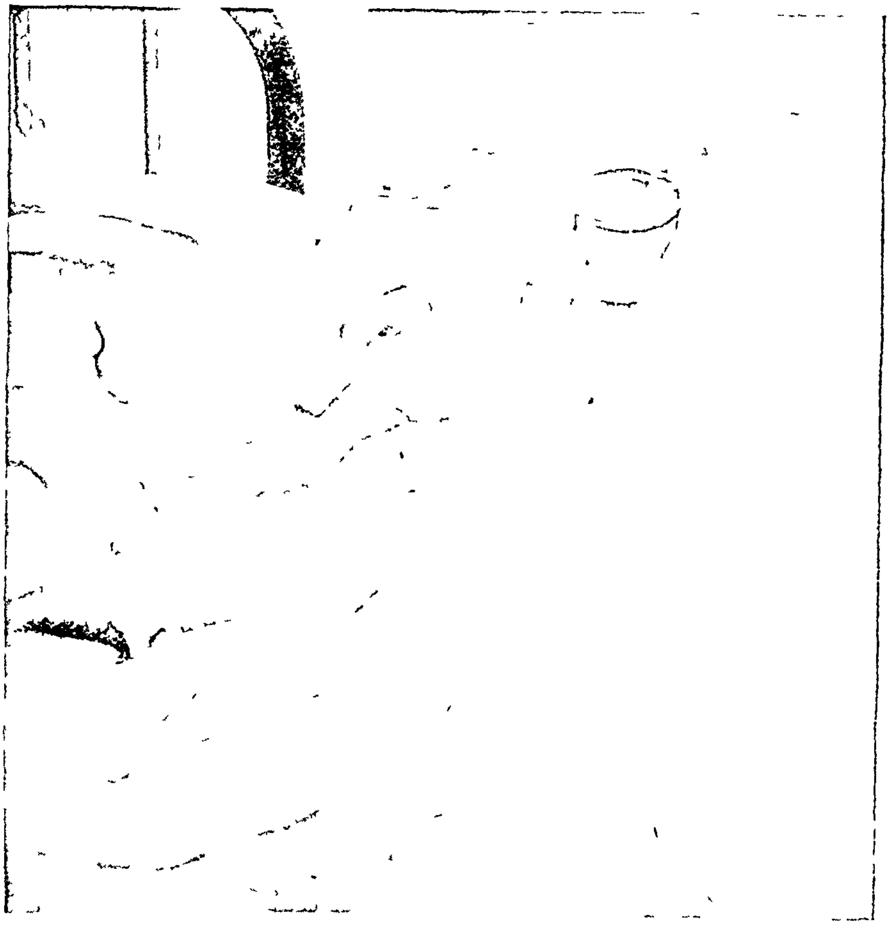
[1] The Training and Work of First Aid Parties H.M. Stationery Office, 6d

[2] *Publ Hlth* October 1940, p 5

[3] Treatment of Wound Shock Instructions produced in coöperation with the Army Medical Service M R C War Memorandum No 1 London, 1940

PNEUMONIA



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oidemic influenza in the south-eastern states at it the same time

rological differences amongst influenza A viruses been recorded by several workers but there is ys an unmistakable antigenic overlap, virus B he contrary is serologically quite unrelated to A ems to be biologically similar in that it will infect ets and mice, but both the primary transfer from to ferret and the subsequent infection of mice a ferrets are more difficult than with A only one in of B has in fact been securely established in ets and mice Sera from patients convalescent n outbreaks of influenza B have shown a specific in neutralising antibodies against B and not inst A Existing evidence as to the prevalence B is based thus far on serological evidence of this rather than on actual isolation of the virus ANCIS deduces on this basis that an epidemic he died in California in 1936[3] was probably caused influenza virus B and it appears also that the ne virus was concerned in an outbreak in the st Indies last summer

This last finding raises a question of much epidemiological interest, for the West Indian outbreak was parently due in the main to influenza A virus is is not the first occasion on which different viruses ve been isolated from one influenza outbreak UART-HARRIS and others[4] recovered several distinct rological strains of virus A from the epidemic in itain of 1936–37 and similar findings are on record om North America and Australia The 1939 outeak in this country was only to a minor extent used[5] by virus A possibly B was the chief villain that year It will doubtless be diligently sought r in this country Difficulties encountered in 1939 emed to set back our hopes of finding a differentiaon between epidemic influenza and febrile itarrhs which should have both a clinical and an tiological basis Now that influenza B is on the iap we must recognise that the problem is even more omplex than it looked a few years ago and must try ot to lose patience with those who are trying to nravel the tangled skein

ARTERIO-VENOUS ANEURYSM

WAR lends special interest to arterio-venous neurysms for most of them come from gunshot ounds Two recent papers by observers who have isagreed before show that this condition is still nperfectly understood Sir THOMAS LEWIS[6] reports bservations on three men wounded in the last war His paper is mainly concerned with the compensatory hanges in the affected limb whereby its circulation s restored to normal or more than normal Diminuion in vasomotor tone is found but does not account or the whole increase in blood flow which LEWIS is nclined to attribute to vascular growth in response o a local chemical stimulus For the surgeon the oint of immediate interest is that here are three ases all of some twenty years' standing without any ardiac breakdown resulting from the fistula One of them LEWIS has reported before[7] and he estimated that the leak from artery to vein in this case amounted to half the cardiac output It is true that these men are not free of symptoms but such as they have are not due to cardiac failure Prof EMILE HOLMAN[8] reporting nine cases in addition to twelve previously reported deals with the problem from a surgical point of view He maintains that the risk of cardiac failure as a result of the fistula may be determined by the behaviour of the blood-pressure and pulse on digital occlusion of the fistula and he maintains that in a recent case an increase of pulse-rate and a fall of blood-pressure even if small indicates a large fistula which is almost certain to overtax the heart sooner or later He records two cases with heart-failure relieved by operation both of which had had a fistula for several years before developing cardiac symptoms Two of his other cases were of several years' duration without cardiac failure and the remainder were recent LEWIS S cases and some of HOLMAN S show that it is not easy to foretell the effect of the fistula on the heart and the possibility of cardiac failure can hardly be regarded as an absolute indication for operation With regard to the general effects of arterio-venous fistula HOLMAN says that the extent of the increase in blood-pressure and fall in pulse-rate produced by digital occlusion of the fistula is commensurate with the extent of dilatation of the heart and vessels proximal to the fistula being least when the fistula is of short duration and greatest in cases of long duration with cardiac dilatation In several cases he observed that the fistula was associated with an increased blood-volume which returned to normal after the fistula had been closed by operation Immediately after operation the same rise of blood-pressure and fall in pulse-rate occurred but these returned to normal with the elimination of the surplus blood-volume LEWIS and HOLMAN differ about venous pressure in these cases but they seem to agree that there is no rise in general venous pressure in the absence of cardiac failure Eight of HOLMAN's patients were treated by ligation or excision of parts of the main vessels of a limb but in none was there any impairment of the vitality of the peripheral tissues In all cases there had been developed an adequate collateral circulation, and as LEWIS's observations show, in a long-standing case it is more than adequate If surgery is decided on as soon as a diagnosis is made, time should be allowed for this collateral circulation to develop and in one of HOLMAN S cases operation was deliberately delayed for this purpose

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MRS CRESWICK ATKINSON, a member of the Horder Committee and technical adviser to the Women s Voluntary Services, has been appointed to undertake social welfare work for women and children using air-raid shelters in London She will confine her work to shelters holding 500 or more, the needs in smaller shelters are thought to be different The appointment is a full-time one Mrs Atkinson will be assisted by a band of workers who will advise and guide the mothers in the new welfare problems created by shelter life She will work with Alderman Charles Key, M.P , the London regional commissioner for shelters

SINCE the publication of the last list of subscriptions to the Medical War Relief Fund £680 has been received, bringing the total to nearly £14 600 impressive observations recorded on p 99 by Colonel WHITBY and his associates in that service make it also clear that a low blood-volume cannot be restored by good intentions and a little fluid, the abolition of severe secondary shock often demands transfusion of almost unbelievably large amounts In judging how much to give these workers have come to rely chiefly on the blood-pressure They find that variation in the pulse rate and the other clinical manifestations of secondary shock are fallacious guides, whereas recovery of blood-pressure runs parallel with recovery of blood-volume—a finding checked in some cases by the simple hæmatological method of blood-volume estimation first used by ROBERTSON and BOCK[4] and lately exploited by officers of the Army Blood-transfusion Service The necessity for such an objective measure of the patient's needs arises partly from the possibility of giving too much rather than too little, for overloading of the circulation, with consequent pulmonary œdema, is a grave danger where large quantities of fluid are being pushed into veins As things stand, however, cases of shock run a far greater risk of death from insufficiency than from excess It is evident that transfusion can save cases that are otherwise hopeless, and in future no one will be able to say that this remedy has failed unless the adequacy of the transfusion has been demonstrated by blood pressure records

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[3] *Amer. J publ Hlth* 1937 27, 211
[4] Stuart-Harris Andrewes and Smith *Spec. Rep Ser med. Res Coun Lond* No 228 1938
[5] Stuart-Harris Smith and Andrewes *Lancet* 1940 1 205
[6] Lewis T *Clin Sci* 1940 4 277
[7] Lewis and Drury A N *Heart*, 1923 10 301
[8] Holman E *Ann Surg* 1940 112 840

In stating that transfusion can save lives we cannot pretend that the saving is wrought without much effort and planning in advance The five pints of citrated plasma used in some of the Bristol cases to restore blood-volume before operation represent the contribution of fifteen voluntary donors, and no organisation short of the elaborate transfusion services that have now been established could hope to provide sufficient amounts of the appropriate fluid with the promptness essential for the successful treatment of those who are badly wounded Secondly, even when the blood or plasma is readily at hand it cannot be used to full advantage unless there are good facilities The vital work of resuscitation after injury demands that between the reception-room and the operating-theatre there shall be distinct and ample intermediate accommodation where an experienced officer is able to direct a generous allotment of skilled help Here the more conservative measures for overcoming primary shock will be systematically applied, and may indeed prove sufficient except when casualties obviously need transfusion at once An initial delay is useful for differentiation between primary and secondary shock, while the patient will be able to bear the burden of secondary shock better if he is no longer suffering from primary shock in addition But if warmth, rest with the head low and smallish doses of morphia do not raise the systolic pressure above 100 mm Hg within an hour, or if fifteen-minute readings show deterioration, transfusion will be wanted When this decision has been taken and the transfusion has been given, and the blood-pressure and strength have risen enough to permit of operation, the patient may leave the resuscitation ward, but even now the need for watchfulness and action will by no means have passed Blood-pressure that has been reasonably restored may fall again during the delay sometimes inevitable before the surgeon can g
work, or through the action of the anæsthetic, o
an effect of the operation itself Apart from t
possibility of renewed bleeding there is the certa
that the watery citrate solution used to pre
coagulation of the blood or plasma will be rap
excreted from the circulation, and this fract
amounts to two-sevenths or more of the total vol
administered In view of this disposition to rel
the needle or cannula should not be removed from t
vein and the patient should be accompanied to t
operating-theatre by a slowly dripping bottle of b
whose transfusion can be accelerated at any mom
if need arises Ideally, a member of the resuscitat
team, perhaps a senior medical student, should foll
each patient from reception until operation is o
With a blood-pressure cuff in situ either this attend
or the anæsthetist can ensure that the patient reac
his final ward in good condition As to the choice
resuscitation fluid, the reports of the Army Blood
transfusion Service establish the safety of citrat
plasma, but their experience suggests that after even
two pints of plasma it is best to introduce a pint
blood Those who are accustomed to put their fai
in dilute plasma mixtures or in normal saline shou
remember that the action of these solutions on blood
pressure is short lived

Anyone who has treated air-raid casualties wi
appreciate the difficulty of collecting data as compr
hensive as those presented in our columns this wee
Amid the hubbub of the blitz the teams of the Arm
Blood-transfustion Service have managed to clear
metaphorical space for clinical research and have the
given their minds coolly to the principles of treatmen
and the verification of those principles in practic
If these and similar studies can be pursued they shou
soon enable us to answer far more distinctly the vexe
but fundamental question how far reduction in bloo
volume is the basic cause of secondary shock and ho
far other factors contribute The facts alread
obtained speak louder than words

INFLUENZAS A AND B

SINCE the successful inoculation of ferrets with
virus obtained from epidemic influenza patients i
1933, most of the more widespread influenza outbreak
throughout the world have yielded a similar vir
when it has been looked for But there has bee
increasing evidence that, apart from sporadic cases an
local outbreaks of clinical influenza, definite epidem
may occur in which this virus is absent or plays on
a minor rôle Workers at the National Institute f
Medical Research and at the laboratories of t
Rockefeller Foundation, New York, lately agree
to call the original agent "influenza A virus," and
keep a sharp look-out for yet undiscovered virus
B, C, and so on, or other agents which might
responsible for those outbreaks from which A is abse
They have not had long to wait FRANCIS[2] h
described "a new type of virus from epiden
influenza" which is designated "influenza B virus
This turned up in throat washings from patients wi
influenza near New York in February and March, 19
and evidence was obtained that it was also concern

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4 Robertson, O H and Bock, A V *Spec Rep Ser med Res Coun Lond* No 25, 1919, p 226

1 Horsfall, F L Jr, Lennette, E H, Rickard, E R, Andrew C H, Smith, W and Stuart Harris C H *Lancet*, 1940, 2, 41

2 Francis, T Jun *Science*, 1940, 92, 405

that is not always easy to differentiate from ntary resistance to flexion A diagnosis of "cerebral lenza" should never be other than provisional, ding a full clinical investigation which would necesly include lumbar puncture, blood-counts, and ibly radiography of sinuses It is doubtful indeed his diagnosis is justifiable at all in the absence of a l defined epidemic of influenza There can be no ological proof and the diagnosis becomes purely culative It has been common in the past to refer newhat loosely to nervous types of influenza arising connexion with an epidemic These are, however, re accurately described as cases in which nervous nptoms are prominent during or after the attack he term cerebral influenza is to be used, there should t be a reasonable probability of the influenza virus ng active in the neighbourhood, and secondly, the nptoms should include distinctively cerebral manifesions—for example, upper neurone paresis, convulsions Jacksonian type or coma Headache, delirium and casional slight neck rigidity are common to many rers and do not in themselves constitute a cerebral type

ALCOHOLISM AND DRUG TOLERANCE

We noted not long ago[1] that even the moderate drinker ust remind himself as he drinks his glass of beer that will play the devil with his leukotaxine and make him i easier prey for prowling bacteria Chronic alcoholism is its own drawbacks It is an old observation that ie heavy drinker is difficult to anæsthetise, and that the iæsthetist can, by noting the amount of ether required put him under, plumb the depth of his alcoholic past hlquist and Dille[2] have been experimenting to find out hether tolerance to alcohol affects the response to ther drugs, but since among the other traditional gures that hard times have banished are the two bottle nd three-bottle men they have had to fall back on rtificially debauched rabbits They produced tolerance o alcohol in these animals by injecting intraperitoneally 5 g of alcohol per kg body weight daily in 20% solution or 15–25 days This dose made the rabbits moderately ntoxicated, on human standards The first and last loses were given intravenously, and tolerance was onsidered satisfactory when the sleeping time after a lose was reduced to a half Tolerance to other drugs was estimated 48 hours later, by which time the residual alcohol had been eliminated while the alcohol tolerance emained much the same Five drugs were tested two hypnotics, pentobarbital sodium (Nembutal) and hexobarbitone (Evipal), an anæsthetic, ether, an analgesic, amidopyrin, and a central stimulant (metrazol, leptazol or Cardiazol) The effect of the hypnotics was estimated by noting the sleeping time after a dose of 20 mg per kg body-weight, alcoholism reduced this from 31 to 18 min for pentobarbital, and from 11 2 to 6 5 min for hexobarbitone For ether the amount needed to produce loss of the righting reflex was the criterion, and this rose from 0 87 c cm per kg before alcoholism to 1 28 c cm afterwards Analgesia was measured by determining the threshold faradic stimulus which would produce a sharp inspiration, and this was estimated before and after the administration of 100 mg of amidopyrin per kg body weight, the rabbit reclining in a hammock the while Here alcoholism made no difference whatever to the action of the drug The reactions of the rabbits to intravenous leptazol were graded into five classes 1, slight quickening of respirations, 2, twitching of the nose and eyelids, 3 a characteristic posture, with the back up, the forelegs stiff, the toes spread out and the tail raised, 4, violent convulsions, and 5, death In about half of the animals 10 mg of the drug produced either reaction 3 or 4, and the average response was the same before and after the acquisition of alcohol tolerance It seems, then, that cross tolerance extends from alcohol to other drugs depressing the central nervous system but no further

CHARCOT-LEYDEN CRYSTALS

Curschmann's spirals and Charcot-Leyden crystals are known to everyone who has read about asthma and though the spirals are probably casts of the smaller bronchi the significance and nature of the crystals is as mysterious as when they were first described in 1853 by Charcot in the heart-blood and spleen of a man who died of leukæmia Leyden saw them in asthmatic sputum twenty years later and since then they have been found in many conditions Speculation as to their nature has been common, coagulation or crystallisation products of eosinophils, spermine and calcium are among the substances said to be implicated It is certain, however, that these colourless, elongated octahedral crystals are most evident in diseases which cause an increase in the blood eosinophils Thompson and Paddock[1] have lately examined by wet smear the blood of 100 patients admitted to medical wards and suffering from a variety of illnesses without once finding the crystals, even though in some instances the eosinophils were as high as 25% Of 5 patients with bronchial asthma and an average eosinophilia of 8% none had crystals in the blood while one patient with chronic ulcerative colitis had typical crystals in the stools but none in the blood On the other hand 2 out of 3 patients with chronic myelogenous leukæmia, one patient presumed to have periarteritis nodosa and another with trichiniasis all showed numbers of crystals in wet-smear preparations Of 11 fatal cases of leukæmia, however only one had crystals in the tissues, these were present throughout the body but were most plentiful in the spleen and pancreas An attempt to induce crystal formation in guineapigs by inoculation with *Trichina spiralis*, which caused a 20% eosinophilia failed Thompson and Paddock are judiciously but regrettably silent about the nature of the crystals except that they are soluble in a variety of common chemical substances and that once destroyed they could not be reconstituted So far, therefore, all we can say is that Charcot Leyden crystals are most likely to be found in asthma, periarteritis nodosa, trichiniasis, in certain intestinal infections and in localised collections of eosinophils such as nasal polyps and skin blebs, the claims that they are present in prostatic secretions and in normal blood are probably false The feature common to these conditions is a high absolute or local eosinophilia and the association seems proven It is possible that the isolation and chemical analysis of the crystals would help in the understanding of the eosinophil

DRUGS AND DRUGGISTS

Addressing the Pharmaceutical Society on Jan 16 Mr Arthur Mortimer, secretary of the Wholesale Drug Trade Association, said that before the war started he had made a world survey of drugs in common use in Great Britain, with their countries of origin and alternative sources of supply This he had done in view of the possibility of interference, through any cause, with the normal supply of drugs The Association of British Chemical Manufacturers had also prepared lists of chemicals These investigations were followed by a census of the stocks of materia medica which had proved useful to the authorities The information thus made available was supplemented by an estimate of the volume of vegetable drugs and medicinal chemicals required by the health services, the Forces and the civil population in peace-time and an estimate of what might be required in time of war This work was not undertaken merely on account of fear of war but as a preliminary to ensuring the best use of resources and the encouragement of home trade Stocks

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[1] *Lancet* 1940, 2 811
[2] Ahlquist R P and Dille, J M *J Pharmacol* 1940 70, 301

[1] Thompson J H Paddock, F K *New Engl J Med* 1940, 223, 936

Annotations

RETIREMENT OF MR R H CURTIS

An outstanding figure in the public administration of this country has reached the end of his official life Mr Curtis, barrister at law chief officer of the mental hospital departments of the London County Council, has just retired under the age-limit after giving service for 46 years, first under the Metropolitan Asylums Board, then under the Asylums Committee, and since 1916 when their functions were transferred to it, under the L C C He will carry with him into retirement the good wishes and affection of all those who worked with him and whom he imbued with his own zeal He read widely and could argue medical points about the latest views on the treatment and care of mental patients with a wealth of knowledge which was often disconcerting He took a special interest in the pioneer work done at the Maudsley Hospital and in the research laboratories of his department He was proud of the two university chairs established at the hospital and the support accorded to it by the Rockefeller Foundation His official reports revealed his mastery of the English language and disclosed one of his hobbies which was the study of the meaning and derivation of words During the long evenings his active brain will need some occupation, and we commend to his attention the writing of a history of the Maudsley Hospital to enlighten future historians about the origin of this remarkable experiment in mental treatment

PSYCHOLOGY AIDING INDUSTRY

When war broke out it seemed possible that the activities of the National Institute of Industrial Psychology might have to be suspended but its work has gone on with a certain difference of objective The need of the moment is not so much the heightening of craftsmanship as the development of repetitive production As a peripatetic correspondent pointed out in October (p 499), craft cannot be acquired by drill but team work reinforced by motion-study and the discovery of the simplest and easiest way of getting results may become a very effective method of mass-production The demand for vocational guidance has not disappeared and an increasing number of industrial firms are turning to the institute for advice , indeed, with a staff depleted by the claims of the fighting services the institute is finding difficulty in meeting all the requests for help which are reaching it But for the most part the staff of the institute has been occupied in devising schemes for training operatives in engineering processes, electrical assembly work, power sewing machining and weaving , by introducing such schemes into industries they have shown that it is possible to shorten the normal period of instruction and ensure greater dexterity The training school is also used to separate those who are capable of doing skilled work from those who will be more successful in routine processes In one firm, where careful hand soldering of seams is required in the manufacture of air tight shell fuse cases, the weekly output at the start was only 1000 good cases and several thousand rejects , as skill improved an output of 10,000 good cases a week was achieved, and it seemed likely that this was the maximum to be hoped for When a systematic training scheme was instituted, however, the rejects declined and the good cases rose to 20,000 a week The institute has also been able to advise on hours of work, rest pauses, shifts, ventilation, lighting, light traps, and the colour of interior paint Help was given to the Joint War Organisation of the British Red Cross Society and the Order of St John of Jerusalem at a depot where parcels were packed for prisoners of war Simpler methods of packing and handling were advised, and improved equipment designed for a new depot Work for education authorities has gone on , intelligence and performance tests have been devised, and new tests for constructional abilities are being tried schools A vocational guidance experiment at Birm ham by Mrs E P Hunt and Mr Percival Smith, which the institute has been associated, show th children who were given—and took—vocational ad were placed more advantageously in industry than th who did not follow the advice , and also more favour than a control group who were given no advice

"CEREBRAL INFLUENZA"

G N Pattison[1] has described 20 consecutive ca what he calls cerebral influenza simulating early cere spinal meningitis arising in two nearby but entir separate military units The signs and symptom frontal headache, which was the most outstand feature, sudden pyrexia with slow subsidence, mal and general pains, an initial small petechial or scarlat form rash on head, neck and chest in 9 cases, photopho in some cases, and neck rigidity slight in 6 men a definite in one who also had a positive Kernig s One man was slightly delirious Lumbar punct seems to have been done in one case only, and th yielded a clear fluid, not under pressure and contain no organisms No involvement of the throat, no e chest was observed The duration of the illness is n stated, but it was short and recovery uneventful O about a third of the patients had chemotherapy a these did not recover so rapidly as the others, w were treated with aspirin, quinine and Dover's powd

It is a good thing to suspect cerebrospinal fever, a imperative to have a lumbar puncture done, in all febr conditions which resemble it and are otherwise une plained Points against the diagnosis of cerebrosp fever in Pattison's epidemic are the absence of vomitin of irritability on being touched or moved, of drowsin or prostration, of neck rigidity and Kernig's sign in t majority, the character of the rash, the clear cereb spinal fluid and the recovery without special treatme A scarlatiniform or *small* petechial rash on head, ne and chest does not suggest meningococcal so much streptococcal activity In meningococcal disease t rash may be macular or rose red papular at onset, b scarlatiniform or minute petechial rashes must be ve rare When the petechiæ appear they are nearly alwa irregular in size, and seldom minute, and their distri tion, unless very scanty, includes the flanks and upp thighs A clear cerebrospinal fluid may, of course, obtained in the septicæmic stage of the disease, b there is usually, though not always a slight increase cell content including polymorphs , and a few colon of meningococci are sometimes grown from clear flu with a normal cell count Rapid recovery witho serum treatment or chemotherapy occurs, too, in r mild or abortive cases, but is unthinkable in 20 conse tive cases A leucocyte count might also be of val In pure influenza the tendency is to a leucopenia w relative lymphocytosis, whereas in cerebrospinal fe there is constantly a decided leucocytosis

In the absence of further details it would be idle speculate on the real nature of Pattison's cases they occurred on the Mediterranean littoral the diagn might be anything from sandfly fever to prim smallpox in well vaccinated subjects It might even, the end, be necessary to relegate them to that hig popular category of the last war, P U O If th occurred in France or in this country a streptoco origin is not unlikely with a primary focus in a sinus elsewhere in the upper respiratory tract The r would appear only in a minority of the men who happened to be Dick positive reactors A scarlatiniform rash easily becomes a minute petechial rash in sites of pressure, like Pastia's sign in the flexures of the elbow in scarlet fever Slight neck rigidity is a subjective

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[1] Jo [illegible]

Special Articles

MILY BUDGETS BY THE THOUSAND

SE interested in the nutiition of different sections population are used to collecting and studying al on what the people eat from a few score families ley do it very intensively, with trained workers to all the foodstuffs consumed by a household in a to measure the amount wasted, necessarily or essarily, and, in fact, to make quite sure that what usewife says fits in with exact observation Not households can be investigated in this detail or, l, would be likely to submit to the necessary entation To increase the field of observation a er approach must be adopted, and " what the r said " must be accepted, in this case, as evidence ier words, the housewife must agree to keep an nt of all her family's expenditure in a given week o keep it as accurately as possible This was the od adopted by the Ministry of Labour in its inquiry taken in 1937–38 into the customary expenditure orking-class households in Great Britain and iern Ireland, a preliminary account of which has een published [1]

e main purpose of the inquiry was the provision of for a revision of the cost-of-living index figures, i are still based upon the way in which the average y spent its income on different items in 1914 derable changes in modes of living and in the bution of expenditure have obviously taken place then, and the relative importance of the different , in the family budget, e g types of food, rent, fuel, ing, etc , was in urgent need of a re-assessment information collected is, however, of much interest any who are not perfectly at home with the construction of index numbers and not particularly interl in the finished product It gives a general picture e standard of living prevailing in this country in the war days and of what the people chose to eat in the lowly-paid majority of our population—not as exact cture, perhaps, as the nutritional worker demands erms of calories, protein, minerals and vitamins, a very valuable picture nevertheless

he present report shows the average amounts spent ifferent articles in 8905 families in each of which the l was engaged in an industrial, commercial or clerical ipation Each budget relates to 4 separate weeks ad over the year, to allow for seasonal variations ather larger amount of data is also given for each of 4 weeks, including families which supplied records 1 or more weeks but not for all four) In their graphical distribution they are representative of the ntry as a whole, but naturally they may be composed families with housewives more capable than the rage, for filling in forms is not everybody's strong it Certainly an average weekly expenditure of 5*s* per family seems surprisingly high in spite of the that the average composition of the families was 3 77 persons, of whom 1 75, or nearly half, were wage salary earners and only one was a child of under 14, per cent rented their houses and made an average kly payment for rent, rates and water of 10*s* 8*d* , per cent owned or were buying their dwellings and l corresponding charges of 12*s* 9*d* , 2 per cent , inly coalminers, lived rent free In total the average t of housing these industrial families was 10*s* 10*d* or irly 13 per cent of their total weekly expenditure of 5*s* (the actual amount was £4 6*s* 3*d* , but a slight justment has been made for expenditure on clothing ich appeared to be overstated) To clothing was otted a weekly average of 8*s* 1*d* , or between 9 and per cent of the total, to fuel and lighting 6*s* 5*d* , or o 8 per cent , to food 34*s* 1*d* , or approximately 40 per it , and to other items 25*s* 7*d* , or about 30 per cent attempt, it may be noted, was made to obtain the ual incomes received, for such might well have led to ack of cooperation

The proportion of expenditure devoted to food is nsiderably less than that shown in earlier studies, when has been nearer 60 per cent The smaller the income the more, of course, has to be allotted to food and with rising wage standards and less mouths to feed the more there is to be transferred to the large group of " other items "

These include cleaning materials 1*s* 1½*d* a week, household goods and utensils 1*s* 3¼*d* , furniture and carpets 1*s* 8¼*d* , tobacco and cigarettes 2*s* 6½*d* , travelling 2*s* 3*d* , newspapers, magazines and periodicals 1*s* , books and stationery only 2½*d* , postages 5*d* , cinemas 10¾*d* , other entertainments 5¾*d* , education 3¾*d* , hairdressing and shaving 6¼*d* , doctor, dentist, midwife and the like 10¾*d* , medicines, etc 6*d* , insurance contributions (state and private) 4*s* 5¼*d* , trade-union subscriptions 1*s* 4¼*d* , holidays 7¾*d* , beer, mineral waters, &c 9¼*d* (but possibly the average housewife has not full cognisance of this item) The contrasts speak for themselves and need no comment The distribution of the 34*s* 1*d* on food is also of much interest, and shows, with one or two exceptions, extremely little variability from one season of the year to another 3*s* 6¼*d* , or roughly 11 per cent , goes to bread and flour and as much as 1*s* 6¼*d* to cakes, buns, pastries, biscuits, etc On the other hand, oatmeal, rice, sago, tapioca, barley, macaroni, and breakfast cereals call for only 3¾*d* , there is clearly plenty of scope for response to the Minister of Food's appeal for a greater use of the first named article Meat (beef, veal, mutton, lamb and pork) calls for 4*s* 8¼*d* , a seventh of the food expenditure, and to this must be added 1*s* 6*d* on rabbits, poultry, sausages, &c , and 1*s* 11*d* on bacon, ham and gammon, a total of approximately 8*s* or nearly a quarter of the food expenditure on meat or meat products Fish of all kinds, on the other hand, amounts to only 1*s* 4¾*d* Fresh milk costs 3*s* 0¾*d* , giving the average family about ½ pint per head per day

In these happier days of peace margarine was in no great demand, for an average expenditure of 4¾*d* per week sufficed against 2*s* 5½*d* for butter Tea at 1*s* 7¾*d*. a week is a fairly heavy item and this average family consumes 1¼ lb of sugar per head per week at a household cost of 1*s* 0½*d* and rather more than 3½ lb of potatoes per head at a cost of 1*s* 1¼*d* Other vegetables cost 1*s* 4½*d* , apples, oranges and bananas 11¼*d* , other fruit (fresh, dried and canned) 10¼*d* , and eggs 1*s* 10½*d*

The precepts of the nutritional experts would suggest too great an attraction to meat, sugar, cakes and buns, too little to green vegetables, cheese and milk puddings. Even within the limits of expenditure possible the average diet could doubtless be improved The average, however, conceals as much as it tells How much variation is there between the diets of the population in different parts of the country, how do they compare between one level of expenditure and another, and how between the urban and rural worker ? The answers to these and many other questions the Ministry of Labour will be able to supply in time from the results of its large-scale inquiry Further instalments of this excellent serial will be looked for eagerly

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MEDICINE AND THE LAW

Uncertainties of a Charitable Bequest

BECAUSE the law does not allow a bequest for " charitable or benevolent " objects to be a valid charitable bequest, some 140 institutions of a charitable nature may have to hand back sums amounting in all to more than a quarter of a million pounds In many cases the money has been spent and no funds are available for replacing it We have been taught to revere the certainty of the law and to admire the principle of judicial consistency We have understood that the law exists in order to protect acquired rights Unfortunately the whole law of charities is full of uncertainty, and, it now appears, institutions which have in good faith received money which the donor intended them to receive must attempt what may be the impossible task of repayment Guy's Hospital was given £20,000 with a request that it be specially used for a children's ward The Westminster Hospital was given £4000 which, it is understood, has been spent to excellent purpose The Royal National Orthopædic Hospital was given £5000 which was devoted to building a swimming-pool for the treatment of paralysis The diocesan board of Chichester received £2000 These benefits cannot be handed back in the form into which the money has been converted If the cash must be found, whence is it to come ?

Ministry of Labour Gazette, December, 1940 H M Stat Office, 6d in short supply were increased, fine chemicals which had not been made hitherto in this country were investigated and plant and working formulæ were devised. Mr. Mortimer referred to a number of crude drugs which are or may be in short supply, although, he added, "if care is exercised, and substitutes prescribed wherever possible, we shall have no difficulty in meeting the situation." Gentian, squill, liquorice, senega, cassia, belladonna, hyoscyamus, stramonium and colchicum should be available, in quantities sufficient to meet all ordinary needs, as a result of measures which had been taken to ensure supplies. Foreign owned British patents had proved a serious handicap to British manufacturers, but medicinal products covered by these patents were now being produced in this country under licences granted by the comptroller of patents and presented under trade names other than those used by the foreign owners of the trade marks. "There is," he said, "no call upon us as Britons to perpetuate the goodwill in enemy trade names, and a strong appeal is being made that the official names should be used wherever possible in preference to proprietary names in scientific literature, by manufacturers and prescribers, and in the teaching hospitals and institutions." The reference was particularly to those synthetic products which are the subject of monographs in the third addendum to the B.P. and he added that the Government naturally expected that every pharmacist would refuse to help to keep enemy trade marks warm. Mr. Mortimer ended with an appeal to set up an advisory committee for the drug trade.

FRIEDLANDER PNEUMONIA

Friedlander's bacillus, a short thick gram negative capsulated bacillus, has long enjoyed a reputation for causing a very severe form of pneumonia, and the tendency of older physicians to exaggerate the frequency of Friedlander pneumonia may be traced to Friedlander's early mistake in confusing his bacillus with the pneumococcus—which incidentally he, not Frankel, first isolated from cases of pneumonia. Bacteriological studies in large series of pneumonias put the incidence of Friedlander infections at 0·5–1%, although occasionally higher and even epidemic incidence has been reported. While the onset resembles that of a pneumococcal lobar pneumonia, certain clinical features help to distinguish Friedlander pneumonia which attacks mostly men in the older age groups. Hæmoptysis may be an initial sign, and the sputum is characteristically gelatinous and tenacious, and often brick-red in contrast to the rusty spit of the pneumococcal infection. Temperature is not high as a rule, the patient quickly becomes very ill, and the physical signs of a pneumonia, particularly crepitations and bronchial breathing, are often absent. There may be leucopenia or only slight leucocytosis. The diagnosis is made by bacteriological examination of the sputum. A gram stained smear shows many typical gram negative bacilli with a negative halo representing the capsule; mouse inoculation gives a pure culture of the Friedländer bacillus. The fatality rate of this acute and usually rapidly fatal infection is 70–90%. Besides this fulminating pneumonia a more chronic form occurs either as a sequel to the acute disease or ushered in by an acute phase, and Solomon[1] has lately recorded the clinical features in 17 cases of which only 4 died. One of the commonest complications of the acute disease is a non putrid necrosis of the lung; the resulting cavitation, usually in the upper lobes, is the outstanding feature of the chronic infection, and has led in a proportion of cases to a diagnosis of chronic pulmonary tuberculosis. The sputum is sometimes blood stained, but more often is rather copious, purulent and brownish yellow, but not foul smelling unless secondary infection occurs. The diagnosis is again confirmed by bacteriological examination of the sputum from which Friedlander's bacillus can be isolated though it may be in mixed culture; the same organism may, of course, be present in sputum apart from a pneumonic infection, as it is often associated with chronic sinusitis. Lung abscess is the most common complication of chronic Friedlander pneumonia and is sometimes accompanied by an encapsuled empyema. Pleural effusion, pulmonary fibrosis and delayed resolution are other complications. Treatment is mostly symptomatic, although Solomon on the basis of 4 treated cases thinks that sulphapyridine is likely to be useful in tiding the patient over the acute phase of the infection though not in preventing complications. He advises against surgical drainage of lung abscess, for this drains adequately through the bronchus. This chronic disease may last with intermittent pyrexia for months and even years.

TRANSPLANTED CHILDREN

WE are between the devil and the deep sea when we try to spare children the strain of war. To see children taken underground at six in the evening in a large city and kept there, exposed to infection, cramped for space to play, breathing fœtid air, disturbed by the pressure of adult life around them, is to appreciate fully the value of evacuation. To conduct a child guidance clinic in a reception area is, it seems, to see the other side of the penny. Speakers at the Tavistock Clinic (p. 121) tell that some children carry into the country the fear provoked by bombing, some break down as a result of their uprooting, some because they are placed in uncongenial homes and some from guilt at leaving their parents behind in danger. The position is not a simple one: there is evidently no clear right or wrong about evacuation and we must try to consider what is best for the greatest number. It is probably out of the question, in large schemes, to consider each case on its merits. Miss W. T. Alcock working in an eastern rural reception area speaks of the impact of "15 000 city-bred evacuees" on foster mothers, and the repercussions on the children, among whom 420 cases of breakdown had occurred. This gives an incidence of 2·8%, and it would be interesting to know how this compares with the incidence of breakdown among town children in times of peace. Many speakers testified to the fact that children stand up to the strain of actual bombing well; Dr. R. P. Garrow found that during 16 months in a population of 12,000–15,000 children in a heavily bombed area none had be alleged to suffer from strain, and this may well ha given an accurate picture of the situation. But must not lose sight of the fact that however well adapt a child may be to stand up to the strain of bombing, he totally unadapted to stand up to a bomb. Duri December 521 children were killed in air-raids, and it fair to assume that most of these deaths occurred towns. If those children had gone to the receptio areas, at least 500 of them would be alive to-day and of those about 15 would have broken down fro emotional strain. Even the unlucky ones might hav preferred the rôle of live dog to that of dead ho It must be remembered, too, that a proportion of th evacuated children referred to child guidance clin would probably have shown symptoms at home in tim of peace; and that among the large numbers of childre who have settled down reasonably well there are prob ably some who have benefited emotionally by evacuatio and have thus been spared a breakdown. The gain t children in physical health as a result of country life reported on all sides and is not lightly to be discounte This is not to pretend that children do not suffer fro transplanting, or that they do not experience emotion stress as a result of separation from their parent But the evidence suggests that by far the greater numbe of them adapt themselves to the new life, that they profi physically and that they are exposed to less direct risk o death. The position is not ideal, it has its own dangers but for the moment it is probably the best we can do.

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[1] Solomon, S. J. Amer. med. Ass. 1940, 115, 1527.

Special Articles

FAMILY BUDGETS BY THE THOUSAND

Those interested in the nutrition of different sections of the population are used to collecting and studying material on what the people eat from a few score families And they do it very intensively, with trained workers to weigh all the foodstuffs consumed by a household in a week, to measure the amount wasted, necessarily or unnecessarily, and, in fact, to make quite sure that what the housewife says fits in with exact observation Not many households can be investigated in this detail or, indeed, would be likely to submit to the necessary regimentation To increase the field of observation a broader approach must be adopted, and " what the soldier said " must be accepted, in this case, as evidence In other words, the housewife must agree to keep an account of all her family's expenditure in a given week and to keep it as accurately as possible This was the method adopted by the Ministry of Labour in its inquiry undertaken in 1937–38 into the customary expenditure of working-class households in Great Britain and Northern Ireland a preliminary account of which has just been published [1]

The main purpose of the inquiry was the provision of data for a revision of the cost-of-living index figures, which are still based upon the way in which the average family spent its income on different items in 1914 Considerable changes in modes of living and in the distribution of expenditure have obviously taken place since then, and the relative importance of the different items in the family budget e g types of food, rent fuel, clothing, etc , was in urgent need of a re-assessment The information collected is however, of much interest to many who are not perfectly at home with the construction of index numbers and not particularly interested in the finished product It gives a general picture of the standard of living prevailing in this country in the pre-war days and of what the people chose to eat in the more lowly-paid majority of our population—not as exact a picture, perhaps, as the nutritional worker demands in terms of calories, protein, minerals and vitamins, but a very valuable picture nevertheless

The present report shows the average amounts spent on different articles in 8905 families in each of which the head was engaged in an industrial, commercial or clerical occupation Each budget relates to 4 separate weeks spread over the year, to allow for seasonal variations (a rather larger amount of data is also given for each of the 4 weeks, including families which supplied records for 1 or more weeks but not for all four) In their geographical distribution they are representative of the country as a whole, but naturally they may be composed of families with housewives more capable than the average, for filling in forms is not everybody's strong point Certainly an average weekly expenditure of £4 5s per family seems surprisingly high in spite of the fact that the average composition of the families was only 3 77 persons, of whom 1 75, or nearly half were wage or salary earners and only one was a child of under 14, 80 per cent rented their houses and made an average weekly payment for rent rates and water of 10s 8d , 18 per cent owned or were buying their dwellings and had corresponding charges of 12s 9d , 2 per cent , mainly coalminers, lived rent free In total the average cost of housing these industrial families was 10s 10d or nearly 13 per cent of their total weekly expenditure of £4 5s (the actual amount was £4 6s 3d , but a slight adjustment has been made for expenditure on clothing which appeared to be overstated) To clothing was allotted a weekly average of 8s 1d , or between 9 and 10 per cent of the total, to fuel and lighting 6s 5d or 7 to 8 per cent , to food 34s 1d or approximately 40 per cent and to other items 25s 7d , or about 30 per cent No attempt, it may be noted was made to obtain the actual incomes received, for such might well have led to a lack of coöperation

The proportion of expenditure devoted to food is considerably less than that shown in earlier studies, when it has been nearer 60 per cent The smaller the income the more, of course, has to be allotted to food and with rising wage standards and less mouths to feed the more there is to be transferred to the large group of " other items "

These include cleaning materials 1s 1½d a week, household goods and utensils 1s 3¼d , furniture and carpets 1s 8¼d , tobacco and cigarettes 2s 6½d , travelling 2s 3d , newspapers, magazines and periodicals 1s , books and stationery only 2½d , postages 5d , cinemas 10¾d , other entertainments 5¾d , education 3¾d , hairdressing and shaving 6¼d , doctor, dentist, midwife and the like 10¾d , medicines, etc 6d , insurance contributions (state and private) 4s 5¼d , trade-union subscriptions 1s 4¼d , holidays 7¾d , beer, mineral waters, &c 9¼d (but possibly the average housewife has not full cognisance of this item) The contrasts speak for themselves and need no comment The distribution of the 34s 1d on food is also of much interest, and shows, with one or two exceptions, extremely little variability from one season of the year to another 3s 6¼d , or roughly 11 per cent , goes to bread and flour and as much as 1s 6¼d to cakes, buns, pastries, biscuits, etc On the other hand, oatmeal, rice, sago, tapioca, barley, macaroni, and breakfast cereals call for only 3¾d , there is clearly plenty of scope for response to the Minister of Food's appeal for a greater use of the first named article Meat (beef, veal, mutton, lamb and pork) calls for 4s 8¼d , a seventh of the food expenditure, and to this must be added 1s 6d on rabbits, poultry, sausages, &c , and 1s 11d on bacon, ham and gammon, a total of approximately 8s or nearly a quarter of the food expenditure on meat or meat products Fish of all kinds, on the other hand, amounts to only 1s 4¾d Fresh milk costs 3s 0¾d , giving the average family about ½ pint per head per day

In these happier days of peace margarine was in no great demand, for an average expenditure of 4¾d per week sufficed against 2s 5½d for butter Tea at 1s 7¾d. a week is a fairly heavy item and this average family consumes 1¼ lb of sugar per head per week at a household cost of 1s 0½d and rather more than 3½ lb of potatoes per head at a cost of 1s 1¼d Other vegetables cost 1s 4½d , apples, oranges and bananas 11¼d , other fruit (fresh, dried and canned) 10¼d and eggs 1s 10½d

The precepts of the nutritional experts would suggest too great an attraction to meat, sugar, cakes and buns, too little to green vegetables, cheese and milk puddings Even within the limits of expenditure possible the average diet could doubtless be improved The average, however, conceals as much as it tells How much variation is there between the diets of the population in different parts of the country, how do they compare between one level of expenditure and another, and how between the urban and rural worker ? The answers to these and many other questions the Ministry of Labour will be able to supply in time from the results of its large-scale inquiry Further instalments of this excellent serial will be looked for eagerly

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[1] *Ministry of Labour Gazette* December 1940 H.M. Stat Office 6d

MEDICINE AND THE LAW

Uncertainties of a Charitable Bequest

Because the law does not allow a bequest for " charitable or benevolent " objects to be a valid charitable bequest, some 140 institutions of a charitable nature may have to hand back sums amounting in all to more than a quarter of a million pounds In many cases the money has been spent and no funds are available for replacing it We have been taught to revere the certainty of the law and to admire the principle of judicial consistency We have understood that the law exists in order to protect acquired rights Unfortunately the whole law of charities is full of uncertainty, and it now appears, institutions which have in good faith received money which the donor intended them to receive must attempt what may be the impossible task of repayment Guy's Hospital was given £20,000 with a request that it be specially used for a children s ward The Westminster Hospital was given £4000 which it is understood has been spent to excellent purpose The Royal National Orthopædic Hospital was given £5000 which was devoted to building a swimming-pool for the treatment of paralysis The diocesan board of Chichester received £2000 These benefits cannot be handed back in the form into which the money has been converted If the cash must be found, whence is it to come ?

When Mr Caleb Diplock died in 1936, his executors found themselves with some £263,000 to dispose of to such charitable institutions or other "charitable or benevolent" objects in England as in their discretion they might select That word "or," it seems, is fatal Bequests for purposes which are described as "charitable or benevolent," "charitable or public," and "charitable or religious" have at various times been held not to be valid charitable gifts because of the difference between charity and benevolence and because of the indefiniteness which "or" introduces In the Diplock case Mr Justice Farwell managed to uphold the executors' distribution The overriding intention of Mr Diplock, he said, was to benefit objects which were charitable in the strict legal sense, the addition of "or benevolent" was not enough to control that overriding intention The Master of the Rolls felt that the meaning of "or" must be disjunctive, it was no good pretending that it meant "and" or "*id est*" The Attorney-General, who appears in cases about charities in order to protect the public interest, sided with the executors and argued that "benevolent" had nowadays become really co-extensive with "charitable" The Master of the Rolls rejected the suggestion The court spent hours examining the nature of a charity—a question largely dependent upon the preamble to a statute of 1601 the only part of the statute which survives Many previous decisions were examined A bequest for distributing the egregious works of the fanatical Joanna Southcott has been held valid, so has a bequest to encourage rifle-shooting, although a bequest to encourage cricket or football is not Is it not really time that the law of charities was simplified and modernised ? Apparently in drafting the Diplock will a precedent was copied from a well-known textbook for conveyancers Somehow "or" was written in mistake for "and" Mr Diplock was not anxious about the exact words, all he wanted was that the residue of his estate should be devoted to the charitable objects to which it has in fact been applied Instead of that, the Court of Appeal declares this part of his will to be invalid, and the residue must devolve as if he had died intestate And thus, as counsel remarked, the money goes to a second cousin in Australia whom the testator had never even seen The Master of the Rolls fortifies himself with the reflection that the court must not be tempted to diverge from the strict path of legal dogma by any consideration of the consequences of its decision

Meanwhile what are the hospitals and other bodies to do ? Lord Justice Goddard suggested that this was a case for a private act There are plenty of precedents for private legislation to cure difficulties arising out of trusts and family settlements But this kind of retrospective intervention with rights of property is as unsatisfactory if effected by Parliament as when it is effected by judges Leave has been given in the Diplock case to appeal to the House of Lords But the bodies which in good faith accepted donations from the estate have now probably had enough of the law-courts for the present

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FIRST-AID TEACHING

PROPOSAL FOR A TRAINING SCHOOL IN BIRMINGHAM

THE Joint Committee of the British Red Cross Society and the St John Ambulance Brigade in Birmingham believe that in the interests of first-aid training a civilian school on a national basis should be instituted In March, 1940, they appointed a subcommittee "to investigate and report upon the present methods of training first-aid workers"—a committee with a distinguished personnel including professors, physicians, surgeons and experts on first-aid training These agreed on the important principle that the rank and file of the first-aid services have often been taught too much, and that the aim should be to make teaching simpler but more thorough On the basis of the subcommittee's report the joint committee has drawn up a scheme for a civilian first-aid training school to be established in Birmingham The plan is suspended at present, because the central Red Cross and St John authorities in London would not give it their sanction, but it is a step in the right direction that the Queen's Hospital, shortly to become the Birmingham Accident Hospital, is to undertake the training of industrial workers in first-aid

The school would be intended primarily for laymen and its certificate would ensure that the holder possessed specialised training in the subject and that he would be capable of imparting his knowledge to others A body of lay instructors would thus be created who would be capable of improving the general standard of first-aid training throughout the country Those holding the certificate of the school would be invaluable to the commandants of British Red Cross and St John Ambulance detachments A R P authorities would welcome trained first-aid teachers and so would the police and fire brigades, school teachers could be offered a course suitable to their needs in training children, nurses, few of whom are taught first-aid at present, would find the course useful, and the scheme has the support of the Royal College of Nursing Industries, to comply with the Factories Act, must have a person "trained in first-aid" in charge of the first-aid arrangements, and the school would be able to provide courses suited to the special requirements and hazards of industry Doctors and medical students might also derive advantage from studying the methods and scope of first-aid teaching at the school

Particular attention would be given to practical instruction, the planning of tactical exercises, and—since the main function of the school would be to produce instructors—to teaching methods The cooperation of hospital and university staffs would enable students to gain authentic practical experience in casualty departments, operating theatres and at post-mortem examinations Lack of such opportunities is one of the chief drawbacks of first-aid as taught at present A real broken limb bears little relation to the obliging pantomime of a partner taking his turn at being the patient Some industrial employers are willing, moreover, to open their ambulance-rooms and treatment stations for teaching purposes

Courses—The usual course would last a fortnight, following the successful practice at the Government A R P school at Falfield Students would be required to live in and certificates would be awarded on the results of an examination at the end of the course A part time course of a minimum of 80 hours' work, to be held on evenings and at week-ends, would be arranged for those unable to give their full time to the work Special courses would be arranged for industrial students and nurses, and refresher courses would be held, annually or biennially, lasting one or two days

The school would be under the charge of a commandant who would be a medical officer with experience of teaching methods and there would be whole time lay instructors to assist with practical training, lectures and demonstrations would also be given by medical practitioners with special knowledge of different aspects of the subject For example, anatomy and physiology would be taught by a member of the university teaching staff, and first-aid in industrial poisoning by doctors with special experience of industry The better informed the instructor the more clearly he can distinguish what is, and what is not, essential knowledge for the student As the subcommittee pointed out, the focus of first-aid as taught today is the treatment of fractures and the accompanying splints and bandages But patients die, not from fractures, but from hæmorrhage, shock or asphyxia The best first-aid treatment is to leave a fracture alone or at all events to subject it to the minimum of manipulation The instructor must know all about splints, the more the better, but he must use his knowledge to explain their limitations in first-aid treatment Successful first-aid depends upon knowledge of what to leave alone

The school would be under the joint jurisdiction of the British Red Cross Society and the St John Ambulance Brigade in Birmingham, and governed by a board drawn from these two bodies, from the Ministry of Health, the medical faculty of Birmingham University, the British Medical Association, and from industry Candidates would be admitted on the recommendations of local authorities, industrial bodies, and the Red Cross and St John organisations There would probably be an inclusive fee of £8 for the full course of 14 days, with board, lodging, tuition and examination, and a fee of £4 for the part-time non-resident course of 80 hours

WAR STRAIN IN CHILDREN

A DEBATE AT THE TAVISTOCK CLINIC

CONTINUING the Sunday afternoon discussions (*Lancet*, 1940, 2, 818) at a meeting on Jan. 12, Dr. W. J. T. KIMBER being in the chair, Miss A. T. ALCOCK (play therapist) opened with the remark that after the last war children grew up under strain with resulting catastrophe. This war added to war strain the problem of separation from home and from the protection of its authority, and the threat to mental health was a serious one. She worked in an eastern rural reception area and all cases of difficult behaviour were referred to her department. The impact of 15 000 city-bred evacuees had produced emotional disturbances among foster-mothers, which had often precipitated breakdown in children rendered susceptible by their own prolonged psychic strain. The chief precipitating factors were uprooting from home, insecurity of the new environment, transferred adult strain and direct air-raid experience. Symptoms produced by bombing were easy to clear up; those due to separation were much more difficult. Four hundred and twenty cases of breakdown had occurred, 249 boys and 171 girls. 89% attended elementary schools and most of them were between 7½ and 11½ years old. This was rather surprising, as emotional tension was supposed to be at its lowest at that age. Nearly all were unaccompanied by the mother. The psychosomatic group contained 129 cases—more than a third of the whole. Psychoneurotic and behaviour disorders represented a quarter each of the total, and educational difficulties one-sixth. The first group included enuresis, incontinence, hysterical vomiting, somnambulism, fits and tics. In the early days children had been referred to the centre according to their nuisance value and enuresis had topped the list. Later, however, foster-mothers and local authorities became more sympathetic, and the effects of prolonged strain combined with this to make psychoneurotic cases the most numerous. The anxiety-depression figure was now the highest of all.

About 100 cases of enuresis had been sent up and some 500 more had been dealt with in the foster homes. Belladonna had seldom been successful but many responded to simple suggestion, relieving immediate anxiety and encouraging the child to believe that he would manage to control his sphincter. The fear of loss of control was so fundamental that it had seemed worth while to focus suggestion on that point. Glucose had been helpful. Separation from the mother had clearly been a factor, and foster-mothers who showed maternal tenderness were often successful where skill and cold kindness failed. A nursery school had been notoriously "wet" for a year under three successive matrons but under a fourth, who was much more maternal, it had "gone dry" in three months. The astonishing thing about enuresis was the measures that cured it: one foster-mother had cured it "with one look" and another by taking the child to the pigsty and saying, "Look at the old sow now; she's clean she is; she wouldn't wet 'er straw she wouldn't, and no more must you!" The resentment and anger of foster-parents put a great strain on the child. Many child-guidance workers had wrongly laid emphasis on the child's inability to help wetting the bed, without laying equal stress on the help that would be given to him. Often a child would say with stolid helplessness "Doctor says I can't help it." In some cases laziness did play a part. A child had been overheard to say to a companion, "It's horrid cold to get out—and they say I can't help it."

There had been twelve cases of fæcal incontinence, which seemed associated with a harsh foster-parent. The psychoneurotic group included 39 anxiety cases, 40 depressions, 4 of general nervousness, 2 hysterics and 2 obsessionals. Sometimes the symptoms on arrival from a bombed area, were really acute for a few days. One child had presented the complete picture of an adult depressive psychosis for nearly seven weeks; she had been a lively, happy child at home. One obsessional girl had compulsively hidden her clothes at night with amnesia in the morning; her phantasy had been of a baby her mother was supposed to be producing at home. She had been helped by encouraging her to mother the foster-mother's baby.

Treatment had been mostly environmental, directed to increasing tolerance and understanding in the foster-mother and to getting the child interested in local activity. Direct treatment had been to try and release emotional strain and get the child to talk about parents and family. There was often guilt at leaving the parent. Very few sedatives had been given; bromides had proved depressing but allonal had been useful. Children for whom physical danger had been the chief strain seemed to react by difficult behaviour, whereas those who suffered more from separation seemed to react with psychosomatic or psychoneurotic disorders. Behaviour troubles had been dealt with by providing suitable activities. Not more than one in fifty of the children had been in the same billet throughout the war, and the varying social standards and the divided loyalty between home and foster-parents made life very difficult for the children. School classes were composed of children who did not know each other or the teacher. Some children seemed to be ineducable, though not defective; they were quite unable to concentrate, with special trouble in auditory association.

In face of constant difficulty and danger there seemed to be a tendency to regress to an earlier stage of development. The strain could not be prevented but it could be countered and, if tackled in the early stages, could be cleared up without difficulty. Unfortunately public opinion was not adequately alive to the urgent national necessity of safeguarding the mental health of the children on whom would fall the burden of building the brave new world. If the result of this neglect proved to be deficiency or neurosis on a large scale, we should win the war only to lose it at home.

The CHAIRMAN said he had been struck by the effect on children of the threat to the parents left behind and the feeling of guilt in having "run away." It was vague, but very real, even in tiny children and produced continuous anxiety. Children were much less affected by bombing than had been anticipated. He thought that perhaps the type of child who reacted psychoneurotically made good at first and only broke down later, and that this might partly explain their rarity at the clinic in the early months. Was the lack of control in the enuretic child a retort to the lack of control in the home and nation? He thought that more than one in fifty of the children in his area stayed in the same billet. The feeling of isolation was a very important and inadequately recognised problem; to find them some constructive job was most valuable.

Dr. EVELYN LUCAS mentioned the enormous numbers of children suffering from neurotic manifestations during what was usually regarded as the "latency" period. It made her wonder whether children during this period at home did more than develop an adaptation due to repression, and so not adequate to deal with upheavals. The incidence of enuresis in Miss Alcock's area seemed to be small in proportion to the total number of evacuees. She agreed that it was important not to over-emphasise the child's inability to help it. One inveterate bed-wetter aged five had been brought up by very gentle, loving parents with whom she had an excellent relationship. One day the mother said "Well really I don't know what to do." "Well," replied the child, "all I can see is that you'll have to be firm with me!" It had then been mutually agreed that she should be smacked every morning after a wetting, and she had been completely cured in a fortnight. The majority of children who were neurotic were children whose consciences were plaguing them. The children she herself had seen in London had not shown the slightest sign of neurotic reaction to bombing; like adults, the more neurotic they had been before the less they were affected. It was not the external reality that affected them, but the fear of the revengeful attacks on the parents which they had secretly so often wished. War was a peg to hang neurosis on. There were undoubtedly children who did very well physically in their evacuation areas, but there were also many who were suffering severely from the mental strain imposed on them, and it was important to ask what could be done to help them.

Miss Alcock replied that the latency period was one when much was asked of children , the children in infant school were really babies, and when they moved up they had to be boys and girls Also, there were likely to be babies growing up at home, and these often stayed with the mother while the 8-year-old was evacuated The first need was for someone to make contact with local authorities and to “ spot ” these cases in the schools Direct psychiatric help was badly needed Regular play centres were required, so that sources of help were available The absorption of the children into local activities was of the utmost importance London schoolchildren in the country showed a very much higher immunity to colds and influenza than country children, but were very susceptible to skin diseases, showing an even higher incidence than in London , perhaps there was a psychogenic factor in this

Mrs Hamlin (social worker at the clinic) said that the children had stood up to the war situation very well , the cases were similar to pre-war ones and the history always went back before the war—with the exception of one somnambulist The absence of the father or brother on war service had been an aggravating factor Enuresis had been the chief problem, and there had been a number of general delinquency cases of the truancy type—due to lack of educational and amusement facilities Old patients, followed up after pre-war treatment, had improved remarkably since the war began On the other hand, a certain number of adolescents had not shown this improvement

Dr Lina Potter said that in the tube station to which she was medical officer, the children were not in the least afraid and were in excellent health Dr D W Winnicott thought that enuresis was often a valuable test to the child “ Am I loved when I'm naughty ? ” In his experience there was a relationship between incontinence and truancy Melanie Klein only permitted her pupils to do “ latency ” cases after they had worked with younger children and adolescents , she found latency a very delicate and difficult state Being at war was one thing and had an effect quite different from being in an air-raid, and that again was quite different from being bombed, being hurt and so on , and each aspect picked out a different type of child,

Dr R P Garrow said that the evacuated child was certainly worse off than the child left in London Medical officers of health had just received a regulation requiring medical examination of children thought to be suffering or likely to suffer in mind or body from remaining in the evacuation area In an indiscriminately bombed area to which he referred, hundreds of children had been exposed to bombs and had come through with no apparent sign of reaction During sixteen months, in a population of 12 to 15 thousand children, no child had been alleged to be suffering from such strain No-one but parents or teacher would report such a child, and if the parents reported it there would be no call for the “ compulsory evacuation ” envisaged by the order He would like help in interpreting the phrases “ suffering in mind or body ” and “ in a state of health such that it is likely to suffer ”

Dr Lucas asked if the order could be applied so that children might be sent back to London from the evacuation areas because they were suffering in mind through evacuation

Colonel J R Rees thought rough compulsory methods might work with adult enuretics but not with children Success was claimed in Northern Ireland by telling patients to go to bed saying over to themselves, “ My bladder is getting larger and larger and larger and larger ” Would these children be better in London ? in special schools ? in camps ? with their own teachers ? In the army there was infinitely more neurosis than among the civil population , the civilians had responsibility and a job, the good soldier was an obedient child and gave up all his individuality Should the children all be occupied in something of national importance ? Would that in the long run be the surest way of avoiding neurotic trouble ?

Miss G E Chesters (play therapist) suggested that play groups should be organised in reception areas The staff of day nurseries was apt to diminish for various reasons, and the numbers should be carefully watched Miss Alcock thought that country life provided adequate material to give children a play outlet

In England Now

A Running Commentary by Peripatetic Corresponden

My friend the shelter nurse took me through t snowy East-end streets to the riverside House af house showed empty gaping windows, beams fall awry, doors swinging loose or barred , here and ther little shop was still selling papers or a few sweets, a proclaiming against the evidence “ Business as usua She said that this street went on such a night, and th was where one fell, but nobody was killed—luck wasn't it ?—and led me in through a broken doorway show me the little house she had got her eye on for af the war, a shell now, but I could see it clothing its before her mind's eye In the end we came to shelter under a wharf and down we went The struck warm and stuffy in the doorway, partly with t human smell which takes a bit of getting used to, a partly with the dry hairy smell of Government canv nailed to bunks The nurse was greeted on all sides , was before six o'clock but people were settling in, a there were children everywhere “ Sickening, it is,” s said, “ they ought to be evacuated We had hardly a when Malcolm came ” (she was speaking of an offic tour of inspection) “ but a week after I couldn't ma out where they were all coming from Then I realise Christmas, of course They'd got them home f Christmas and they haven't sent them back ” threaded our way through the three-decker bunks rou which the children were playing tag The parents we laying out bedding, gossiping or sitting down to kn They were cheerful enough and took it all as a matter course Surely man is the most easily condition animal of any ? The medical-aid post was tucked aw in a corner, a tiny room separated into two by a partitio The outer part held two narrow beds already made up “ our clean sheets,” said the nurse with pride—a wir netting stretcher, a table and a row of chairs “ We ha gargling,” the nurse said, “ for the children , then I ca keep my eye on them And I get the P S Us to sho them how ” “ P S U ?” “ Pacifist Service Uni they do an awful lot for us Here's one of them ” H came out of the inner sanctum, looking about eightee but really twenty-two, and turned to at once as cour and lieutenant

I saw a lot of the P S U in the course of the evenin and thought them more impressive than most things t be seen about today The unit I visited lives in Stepney flat , there are ten young men, and two siste who cook for them They undertake every kind of usef job in the district—cleansing shelters, emptying latrine removing furniture free of cost for those who are bombe out, and carrying round cocoa and doughnuts to th shelters at night—rather guiltily because they think ought to be vegetable soup and raw carrots The spend a great deal of their time fixing up things for peopl who are puzzled—arranging matters with evacuatio authorities, putting in claims to the right funds for railwa fares or other allowances, and helping the rigid whee of local government to follow, in the main, the rig tracks They appeared to find the whole affair rathe entertaining, grinned about being sick the first time the “ did latting,” argued about world and local affai throughout their meals (accompanied by Mozart on th gramophone) and rushed off immediately afterwards o the next job They appeared to think nothing of th blitz, but mentioned the snowballing of the youth o Stepney with respect Occasionally a citizen in a shelte takes one of them aside “ I hope you won't tak offence at what I'm going to ask, Alec,” he begins— Gordon, or Charles, or whoever it may be—“ but is true that some of them chaps down at your unit conchies ? ” When told, yes, quite a lot of them, th citizen is nonplussed , his experience of the work of th unit strikes at his preconceived notions, so he shak his head a bit and gives it up

I was taken to dinner at the unit almost immediatel after arriving at the shelter, and then went out on cocoa round We picked up the cocoa at a place calle “ Paddy's Goose,” a social club with a canteen, and wer first to one of the archway shelters A railway bein lways a military objective the advantages of taking over under it are not striking but the arches were onvenient to brick in and local authorities decided to se them Condensation and water draining from the nes, used to trickle on the shelterers, but this has been vercome in some by building a wooden penthouse roof iside the arch with wood taken from demolished houses The wood is old knot-holed and worn and any bed bug ho has been bombed out would find in it a wide choice of onvenient well-built residences; those who have been here from the start are presumably at home and waiting o be shifted The P S U offered to creosote the whole nterior, but though the local body approached agreed hat that was the proper thing to do the final message hich came back was that the Government wouldn t ear of it: this ruling though fantastically improbable olds good and the authorities have compromised, in the rch I visited, by painting half the roof and parts of the osts which support it with cream paint The posts are estined to take bunks in due course which unlike the unks in most shelters will thus be fixed In view of his a suggestion was made that the lowest bunk should e rather higher than the regulation nine inches off the oor in order to make it easier to clean beneath it No he reply came back the Government wouldn t hear of it f there was any reason to suppose the Government was s sot in its ways as this the outlook would be black. he hitch is doubtless somewhere else in the machinery he lighting in this shelter was good there were two ianos and the people had made the floor into a vast and omfortable bedroom The bedding was spread on oards and boxes There were only half a dozen deck hairs in use Some of the children—there were fewer ere than in the first shelter—were tucked up already Others were playing an alarming game of getting the aby to jump off the piano into the arms of a slightly arger brother Cocoa went round Then three anxious-ooking young men came in from the Friends Ambulance Unit to show a film They conferred with the shelter marshal and with each other they chose a bit of wall hey ran up a silver screen about five foot by six in area, hey shone a beam upon it and instantly crocodiles and napping dogs appeared from busy juvenile fingers laced before the lens There was a little more fidget-ng and winding and then we found ourselves watching 'Rome Express.' and hearing the voices of the actors ooming unfamiliarly in the hollows of the arch We moved on and visited the crypt of a church very different rom the social centre we had left The people sat on wooden benches in cold and narrow passages they all eemed old and desolate, and the lighting was poor They had a medical-aid post, however, with a large and eassuring Irish first-aider in charge, and a cat who vanted to try the taste of Dettol In another railway rch there were as yet no bunks the brickwork had not been roofed in, and the beds were set round the walls voiding the places where the drips came in when it ained The company sat in a circle round a red-hot oke brazier and the atmosphere was tropical I went out anxiously trying to recall figures about carbon monoxide percentages Back we went through the snow o our first shelter Gargling was over and I had also missed baby bathing instituted by the nurse but there was a two-year-old in one of the beds considering whether to develop scarlet fever or not All was quiet bove and below ground We went into the inner room of the medical-aid post where there was a three-tier bunk, table, cupboards of official equipment, some chairs and primus stove which had already obliged by boiling the ettle for tea Then I met the shelter marshal and he ook me round now that everyone was abed and sleeping he shelter is a large one and the bunks are set close, e wriggled through passages between them The helter marshal, who felt he must do the honours for he shone his torch serially on "the fattest woman we ve ot," "husband and wife down below children up top" nd "our bad heart case' I felt apologetic at this nauthorised peep-show but the sleepers never stirred saw the latrines, chemical buckets with seats, just dequately screened with canvas and I saw the place where the new water-closets are being built at speed—he workmen were in at eight on Sunday morning The marshal was keen, proprietary and kind, he clearly felt was his shelter I reflected that the nurse had called it "my shelter, and the P S U referred to it as "one of ours' No doubt these sleepers felt it belonged to them and it was certainly theirs if numbers count And the local authority has an official claim

But it must be the universal feeling of ownership which makes this one of the good shelters and which will raise the standard in all shelters in time I went to bed at last in the bottom tier of the bunk in the medical-aid post and discovered a new and forcible objection to lying within nine inches of the floor, the insecticide with which the P S U in their cleansing operations liberally sprinkle all floor cracks is so powerful that I began to suspect myself of having insect blood But the bunk was comfortable and the Government blankets warm I went to sleep instead of dying In the morning when we went up blinking into the daylight, the wind off the river smelt strange We breakfasted with the P S U to the melodies of what one of them, contemplating the labours ahead, called "Eine kleine Latmusik

* * *

I wish I had a penny—tax-free, of course—for every time I have been to a pantomime As a boy a taste for low comedy and catchy airs often took me, with a fellow-addict to the gallery of the local theatre during the Christmas holidays Now, as befits a dutiful parent I have had to resume the practice But no longer do I frequent the gallery, instead I go once a year only and then affluently in the stalls This year the slapstick was well up to standard and I found myself waiting eagerly for the old jokes and laughing at them anew Once more I noted how the pantomime tradition permits the author to play fast and loose with the plot of the story and the satisfactory—not to say smug—way in which good triumphs over evil and right over might It is really deplorable how so many of us applaud the moral principle on paper without bothering a bit about it in fact Contrary to my experience of fairy queens who generally look obese and hypertensive, this year's model was I thought, a trifle on the pale side and looked as though she could have done with a course of Blaud's pill But it was heartening to see how we can laugh at our present misfortunes, the children especially being delighted with anachronistic references to sirens shelters and gas-masks As I grow older I find myself paying less attention to the players and more to the children in the auditorium How they do laugh to be sure, particularly at somebody s discomfiture The upsetting of the dame on her milking-stool by the comic cow was received with sheer and shrill ecstasy—even when it happened for the third time Next year I should like to sit at right angles to the stage in the gangway between the stalls and the pit so that I can really watch the audience without getting a wry neck

* * *

One night one end of the nurses home was wrecked by a bomb but happily they were all over at the hospital, most of them doing voluntary duty admitting casualties The next day one of them received a wire from her father in the country "Have heard the news pack everything and come home' She wired back "Nothing left to pack not coming"

* * *

A few days ago the *Times* on its middle page published a letter from an army officer of high rank in which he said "Our new armies are being officered by classes of society who are new to the job The middle. lower middle, and working classes are now receiving the King's commission These classes unlike the old aristocratic and feudal (almost) classes who led the old army, have never had 'their people' to consider They have never had anyone to think of but themselves This aspect of life is completely new to them, and they have very largely fallen down on it in their capacity as army officers These young officers have been reared in an atmosphere in which the State spoon-feeds everybody from cradle to grave and no-one feels any responsibility for his fellow men' This reactionary little swing with its implied boastfulness, is without doubt due to our successes in the Western desert Self-esteem is being restored, self-confidence is coming back, and must find expression if not by the sword then by the pen. The hackles are up the erectores pilorum prance, the adrenals swashbuckle the high gods in the cortex are ignored After Dunkirk it was a very different story We had been defeated, the nation was as one man, " one family " the *Times* told us, fear had made kindred of us all, protoplasm sought brother protoplasm, and we humbly felt the brotherhood of man But I think that the editor of the *Times*, or whoever is responsible for vetting their correspondence, should realise that the process that is so obviously gripping the Colonel has got its hold on the rest of the nation too, even including " the middle, lower middle and working classes " Anyhow Mr Priestley will put all that right next Sunday

Letters to the Editor

PREVENTION OF DIABETES

SIR,—Professor Himsworth (*Lancet*, Jan 4, p 24) states with regard to the data presented by Haist, Best and Campbell in the *New England Journal of Medicine* (1940, **223**, 607) that " far from indicating rest of the islet tissue the authors' data concerning the effects of starvation, high fat diets and excessive administration of insulin can be more easily interpreted to mean overstrain of that tissue " Part of the evidence in question comes from experiments in which dogs, made permanently diabetic by treatment with anterior pituitary extract, were fed on a diet of pure fat (beef suet) Mr H P Marks and myself (*J Endocrinol* 1939, **1**, 470) found that this procedure not only almost completely abolished glycosuria and ketonuria in such a dog, but increased the proportion of a test dose of glucose retained by the animal from 20% to 80% It does not seem possible that this increase in the sugar tolerance of the diabetic animal was brought about by an overstrain of its islets Perhaps I may quote our tentative explanation of these observations—" the pancreas of the pituitary-diabetic dog contains a small amount of insulin which, however, is required little, if at all, for the regulation of metabolism when a diet of pure fat is given This insulin therefore accumulates in the pancreas and is available to ensure the proper metabolism of at least a portion of a small dose of ingested carbohydrate, in spite of the fact that, in accordance with Himsworth's ideas, the insulin-sensitivity of the tissues may have been depressed by the high-fat diet " Himsworth's theory, that the sensitivity of the tissues to the action of insulin is diminished by a diet of fat, does not appear to be incompatible with the belief that the absence from the diet of sugar, or glucogenic substances, rests the insulin-secreting mechanism of the pancreas

Professor Himsworth also states that the views expressed by Professor Best and his colleagues, and their suggestions for medical treatment, do not depend on evidence tested in the clinic Discussion of the general sense of clinical evidence is beyond my proper scope, but I cannot refrain from quoting from the clinical investigations of Karl Petrén, which are not mentioned by Professor Best and his colleagues, and which indeed appear to have received too little notice generally " In grave diabetes, I have for some years past often used one, two or three successive days of a diet of only butter (about 100–200 g) " (*J metab Res* 1924, **5**, 34) In this paper Petrén gives numerous examples of the treatment of severe diabetes with a diet consisting almost completely of fat

F G YOUNG

National Institute for Medical Research, Hampstead

DYSPEPTICS IN THE ARMY

SIR,—It would appear from your leading article of Jan 11 that the figures and conclusions of Mr R T Payne and Dr Charles Newman (*Brit med J* 1940, **2**, 819) are being accepted as the explanation of dyspepsia in the Army I have been astonished that so far no comment, critical or otherwise, has been made or at any rate published I find that the data in this article are almost wholly incomprehensible in relation to my own experience and that of other gastro-enterologists working in the Army with whom I have discussed them

We are asked to believe that nearly 90% of dyspepsia in the Army is due to peptic ulceration It may be that some authorities wish to believe that all dyspepsia in the Army is organic, and if so this article must indeed represent an almost complete wish fulfilment I believe that this is far from the truth Of 287 cases of dyspeps these authors found 226 " proved " ulcer cases (though i 8 the site was undetermined) and another 21 " probable ulcers, making a total of 247 ulcers out of 287 allege unselected cases of dyspepsia With the items liste under indefinite (4) and wrong diagnosis (11), carcinom volvulus and gastro-enteritis (7), I am not concerne but on the figures for gastritis and duodenitis (7) an neurotic and functional (11)—or say 3%—I should lik to make some comment

We are reminded in your leader that a soldier is onl a civilian dressed up in uniform Even in civilia hospital gastro-enterological practice, *not more than o in four cases* with dyspepsia as the presenting sympto are found to have organic disease , the rest are gastr neuroses What then has happened to these cases in th *Army ? What has happened to the small but qui* definite group of reflex dyspepsia, for example of gal bladder origin, the dyspepsia of early pulmonary tube culosis, that of faulty mastication, dental and mechanic origin, and of achlorhydric dyspepsia ? If the inciden of peptic ulcer is so high why have we not seen more cas of gastro-duodenal hæmorrhage and perforation ?

With such a high proportion of " proved " ulcers w are entitled to know the nature of the proof accepted b the authors in compiling their diagnostic tables In o line of the article they speak of exact diagnosis but in th *next state that radiography was often done too late t* reveal an ulcer crater It is possible that the fault diagnosis of peptic ulcer may be related to the type o X-ray plant available for use in the majority of bas hospitals which, in the hands of the most expert radiol ogist, may hardly be adequate for exact gastro duodena X-ray work , or it might be ascribed to the need fo entering an " exact " diagnosis before a case was evacu ated to the U K How many times has accuracy i diagnosis been sacrificed to the necessity of sayin " something definite " for the purpose of transfer an evacuation ? Yet these diagnoses must perforce be use by the medical disembarkation and distributing head quarters and provided the authors with their suspecte gastric and duodenal cases in the hospitals where they saw them Apart from diagnostic accuracy *this metho* of selection is surely unsatisfactory as a means of providin a fair sample of dyspepsia in the Army, although it i quoted as a representative and unselected sample o dyspeptic cases

Next we are asked to believe that only 3% of cases o dyspepsia are neurotic and functional My colleagues in psychological medicine do not usually lack the ability or courage to present their views in your columns Does their silence mean that they agree with this astonishing conclusion ? My interest is in organic medicine but in gastro-enterology it is impossible to ignore the part that psychological factors play in producing gastric symptoms My experience among army dyspeptics does not materially differ from that of civilian hospital and private practice My present figures indicate *that 60%* of army dyspeptics are fundamentally neurotic, the dyspepsia being either purely psychogenic or psychogenic factors being respon sible for a continuance of symptoms far beyond the " organic " span Even among cases with a past history suggestive of ulcer, or cases of proved ulcer, the perpetua tion of symptoms (despite full ulcer dietetic regime) when all possible complications of the " ulcer " have been excluded suggest that some of these patients show a psychological " pattern " reaction reproducing subcon sciously a syndrome which once may have had organic significance but is now purely psychogenic

Finally I have reason to doubt the view that cases of persistent dyspepsia probably have severe gastritis The appeal to direct inspection of the stomach by gastroscopy among 58 otherwise negative dyspeptics with persistent symptoms has shown that in two-thirds the mucosa wa normal, in one-fifth trivial to moderate superficial mucosa changes, for the most part capable of being satisfactorily treated, were present Only in about one-seventh were serious organic mucosal changes found, including acut ulcer missed by X ray, chronic patchy gastritis, anasto motic gastritis and atrophic gastritis

Unfortunately only a small number of these gastr neuroses show easily detectable evidence of neurot illness—e g , somatic symptoms, tremors, sweats, palpit tion, acknowledged anxiety, fears, extreme boredom ew are highly suggestible, while a still smaller number are frankly hysterical showing induced pseudo-epileptic rises, anæsthesias and the like Is it because the psychotherapeutic outlook for the neurotic dyspeptic is not very favourable that the problem has not gained more active attention from our colleagues in psychological medicine ?

Pinewood Berks STANLEY J HARTFALL

B M A MEDICAL PLANNING COMMISSION

SIR —You suggest in your last issue that the Medical Planning Commission set up by the B M A can properly laim to be representative May an old reader join issue with you on this point ? It is assuredly not representative of all those interested in the future of the medical services Perhaps it was never intended to be so, but to express only the views of the medical profession on its own future Is it even representative of the medical profession ? Where are the left-wing representatives whose influence might go some way to neutralise the almost overwhelming preponderance of those whose oyalties and already-announced policies tie them to the chariot wheels of the B M A ? It is surely mere affectation, for example, to suppose that the Medical Practitioners Union (which is already exploring similar ground) stands for nothing at all in the medical profession, or is incapable of contributing useful material to the commission's deliberations It is quite possible that the M P U. would decline to send representatives, but it should surely have been asked It may perhaps be doubted whether any body representative only of the medical profession, and excluding representatives of the Services, the Ministries and the M P U , can possibly hope to command any appreciable degree of public confidence

Sevenoaks GORDON WARD

SIR,—Your leading article of Jan 11 is timely Reference is made to the inexplicable secrecy in which the commission was established , and your criticism of the age-distribution amongst its personnel seems to be justified But what is most important is your opportune reference to the tendency which has undoubtedly existed for some time past for such bodies to regard themselves as more representative of the profession than they are , and to the undemocratic method of creating a finished scheme when the vast majority of the profession have not had any opportunity of expressing their approval or judgment on it This practice has caused anxiety in the minds of many members of the profession , an anxiety which has found expression in numerous letters published in the medical press during the past twelve months

The decision to create a commission to inquire into the present organisation of the medical profession is most wise , and no-one will doubt that the B M A possesses excellent constitutional advantages for appointing such a commission, and permitting it to function in the most efficient manner But there is evidence to show that executive bodies have tended to lose sight of their democratic constitution , and to complete far-reaching arrangements affecting in a most intimate manner every member of the profession without first acquainting them with the details of the scheme, and without giving the profession as a whole the opportunity to discuss, to consider, to sanction or to modify arrangements which when brought into operation may prove so detrimental to the profession's well-being and to the community The ever-increasing tendency to recognise more and more so called ancillary services has not met with the unanimous approval of all members The precedent thus created has already brought an ever-increasing number of requests from various bodies, whose formal recognition cannot ultimately be in the best interests of the profession or the general public Furthermore, since certain of these bodies have received formal recognition, there is already evidence of an abuse of privilege which cannot be controlled, since the General Medical Council has no jurisdiction over the offenders The ever-increasing number of foot doctors advertising in the public press is surely a testimony to this statement

But perhaps the most striking example is given in the manner by which the original Emergency Medical Service scheme was established Had the profession been given the opportunity of considering and discussing the details of this scheme, many of its gross absurdities, its injustices and its inherent weaknesses would have been pointed out and modified as the result of free debate and the knowledge of practical experience But no such opportunity was ever given The profession was asked to sign a form of registration in a purely voluntary capacity it was asked to elect local emergency war committees, the characteristics of which were predetermined , and it became more and more obvious that the voluntary form of registration would become a binding and compulsory force once a state of war existed Many individual medical men both consultants and general practitioners, have found themselves as a result in a position where their rights as individuals and their freedom as citizens, indeed the very financial security of their practices, have been swept away from them, leaving them stranded, and without any means of redress, justice or compensation The many cases of hardship now existing among all grades of the profession throughout the country as a direct consequence of the operation of the original E M S scheme stand as a certain indictment against the executive bodies responsible for these Star Chamber methods No-one will deny that during a state of national emergency hardships and sufferings are bound to occur , and every right-minded citizen is willing to take his fair share and to relieve as far as possible the misfortunes of his neighbours But the operation of the original E M S scheme made it impossible for mutual assistance to be given Membership of the Protection of Practices Scheme was not compulsory, and the sanction or the recommendation of a local medical war committee was necessary before the individual could do anything These hard-worked bodies must have found it extraordinarily difficult to cope with their duties, and although they have been much criticised they have functioned as satisfactorily as was possible under the circumstances Ultimately it was found expedient to revise the E M S scheme fundamentally in the light of practical experience , but not before irreparable damage had been done to the practices of many Would not free debate and discussion have prevented these adverse results ?

If the planning commission will seek to obtain evidence from all possible sources and will publish this evidence with its accompanying recommendations and report thereon in the recognised medical press , and if the results of its deliberations are made open to the profession for free debate and sanction, the commission will have fulfilled an excellent and most timely duty for which the personnel will receive the full gratitude of all But if the executive of the B M A , having received the report and recommendations of the planning commission, should draw up and commit the profession to any reorganisation, or to schemes of national service , if it should present to the rank and file a "fait accompli " and a request for signature in agreement, as happened in the case of the E M S , the executive will exceed the powers of its own constitution , and not only will it fail in its duty to the profession but it will also create a most difficult and undesirable schism Already another professional body has been circularising the profession with details of a proposed scheme of nationalisation This division of the profession into two rival camps is surely most undesirable at the present time , and if a further splitting up is to take place as the result of a strongly organised opposition to these undemocratic methods the end-result will be that the Government will step in and decide the issue once and for all A house divided against itself cannot stand

The coming of peace will not bring a solution to the many social and national difficulties of which mankind has now become conscious It is probably true to say that not since the Reformation have the peoples of Europe been so shaken by ideological differences, both national and human, political and civil, economic and financial These ideological differences have now reached such a degree that they have become blatant signs of gross disease in the civilised state of our western world Their interpretation and their appropriate treatment will require the concentrated efforts of all concerned under a patient, wise and philosophical leadership Nor is it possible to assess with any degree of accuracy how the requirements of the so-called "New Order" may best be fulfilled in so far as the medical profession is concerned in carrying out its duty to the community Nevertheless, it is obvious that the most careful and statesmanlike planning will be required if our traditions, our academic independence, our professional freedom, and above all our ethics, are to continue to exist, and to regain their erstwhile high standard No claim is made for a revival of altruism in our medical life But few will deny that, in company with other professions and callings, the heat of intense competition and the economic difficulties of modern life have brought about an unhealthy state in the general organisation of the medical profession, which manifests itself not only in the widespread apathy to these most important medico-political considerations but in the economic state of our voluntary hospitals, and in the very relationship between the profession and the community Is not the growth and development of quackery during recent years in itself an indictment against our profession ? A section of the community will always be thrilled by the jargon of the charlatan and flattered by the panderings to its pseudo-intellectualism , but the fact remains that if the profession as a whole satisfied the demands of the community as a whole quackery could not grow and thrive as it has done

At no time has the medical profession been in greater need of strong leadership than at present , strong statesmanlike *leadership to carry out much-needed reforms* , to enable the profession to assume its true relationship to the community and to the state without loss of that dignity, prestige and independence for which the many illustrious men of the past strove so hard to achieve and to hand on to us as an inheritance and trust

Bournemouth LLOYD OLVER

DIPHTHERIA PROPHYLAXIS

SIR,—Now that diphtheria prophylaxis has been taken up by the Government as a national measure it is obviously up to all local authorities, all educational authorities and all medical officers of health to endeavour to get as large a proportion of our child population immunised as possible in order to get the maximum beneficial effect from the measure It seems to be admitted that a half-hearted resort to this measure is likely to be useless, if not worse than useless For this reason Dr Benjafield's letter in your issue of Jan 11 is to be heartily welcomed But I would like here to make a practical suggestion to remedy a rather glaring anomaly —viz , that as immunisation is to be done chiefly through the schools, it should be done on the basis of attendance at a particular school, rather than on the basis of the child's residence in the area of a particular authority It frequently happens, especially in rural areas, that children residing in the area of one local authority may be attending a school situated in the area of another authority, and therefore are liable to be excluded when that particular school is being immunised This is a very short-sighted policy, and there is the less excuse for it now that the Government is providing toxoid free of charge Clearly, there should be a complete give and take between local authorities on this matter, and " Let them all come, the more the better " should be our motto

Leicester C KILLICK MILLARD

SAVING ON DRUGS

SIR,—In your leading article of Jan 4 you remark that *an insured person will not relish being refused his familiar* medicine while its proprietary counterpart can be bought at any chemist's shop Here you touch on a frailty common to all mankind, whether represented by insured persons or panel doctors if the goods are there some of the public will have them, and if the drugs are there the doctor will prescribe them The remedy is to cut off supplies of non-essential drugs, and then it will be as useless to try to buy or to prescribe them as to ask for an onion I cannot think that makers of proprietary medicines will be allowed first call on supplies while doctors, hospitals and dispensers go begging The revenue from patent medicines is too small to influence the Treasury

If the therapeutic requirements committee can do no more than advise I agree that much of its work will be wasted, but in fact it can do much more than that This committee seems to be in the position of an advisory body to a Government department We are bound to assume that if the Ministry of Health tells the appropri ministry that cargo space need not be used to br certain goods to this country the goods will not come, a the recommendations of the therapeutic requireme committee will then have the effect of a departmen order If the ministry which is advised by the co mittee acts on that advice the drugs on the non essent list will soon be as obsolete as the banana In any ca it seems fair to suppose that the committee which is compile a war formulary, on the initiative of the Minis of Health will ignore the existence *of those items* wh have been declared unnecessary Incidentally, it is to hoped that the Government will not use the power tha undoubtedly possesses under the Defence Regulations forbid the prescription of any drug not included in war formulary

The inclusion of the wholesale drug trade in the form lary committee implies that the availability of suppl will be kept in view by the committee during the wh of its work This is, of course, the crux of the matte if all drugs were freely available there would be no n for a book of emergency recipes

Let us hope that the formulary will not have to be use for long and that we shall soon be back to the B and the B P C which take ten years' labour to prod *instead of the " month or two " which you allot to* formulary committee If the war formulary can produced so speedily it will be because of the vast amo of work which has been done by the Pharmacopo Commission and the Pharmaceutical Society in prepa tion for the next issues of their respective volumes, wh cannot be published while the paper shortage lasts have had two important ad-hoc addenda to the B since the war began and others are probably in offing , this is a good record for a body which must mo cautiously Why you should suggest handing over responsibility for the B P to the Ministry of Health I to understand Why put old wine into new bottle Why make the tax-payer pay for a job which now co nothing, and the profits from which are spent on resea for future pharmacopœias ? Let us have the w formulary by all means, and quickly, but let us refra from trying to take long views while visibility is bad

Whitehall Place, S W 1 F C GOODALL

BREAD

SIR —The present controversy regarding the compo tion of bread prompts me to recall the experiences of last war when in the Mesopotamia campaign diseases d to vitamin deficiency were a serious problem These a fully dealt with in the articles on beri-beri and scurvy the Official History of the War (vol 1, Medical Servic Diseases of the War, vol 1, chaps 14 and 18), which was my privilege to write

Up to 1917 fresh foods were almost unobtainable a the importance of the composition of the flour becan enhanced The British troops were supplied wi bread and biscuits made from white flour and suffer from deficiency in the vitamin-B complex and the oth important accessories which are present in wholeme flour In consequence a number of cases of beri b occurred The Indian troops were supplied with wholemeal flour (atta) and also with dhall (a lentil) bo of which were rich in vitamin-B complex and the oth accessory *food factors in which white flour is* deficie Beri-beri did not occur in the Indian troops The r of beri-beri in British troops was obviated by the intr duction early in 1917 of the issue on three days a we of bread composed of a mixture of wholemeal a white flour , also Marmite, which contains yeast extra and is rich in the vitamin-B complex, was issued tw weekly There were no cases of beri-beri after adoption of these measures

It is now generally accepted that white bread and wh flour are greatly inferior to wholemeal bread and flour foods in a dietary where bread is the most importa basic constituent, which is the case in war-time owing unavoidable food shortage In this war the Governme have wisely decided that some action is necessary sin the nutrition of the nation is of paramount importance victory The suggestion has been made by the Minist of Food that the addition of synthetic vitamin B_1 a calcium carbonate to white flour would yield which would compare favourably with wholemeal bread On theoretical grounds there are serious defects in this proposition since vitamin B_1 does not supply the deficiencies of white flour in the vitamin-B complex, which includes many other vitamins than B_1 such as vitamin B_2 and B_6 Also the absence of vitamins A and E nicotinic acid and riboflavin in the reinforced white loaf and the eficiency of mineral salts and fat are of great importance

This criticism has been fully confirmed by Dr Harriette hick's research reported in THE LANCET of Oct 26 940 It was clearly proved by feeding experiments on oung growing rats that the reinforced loaf was inferior o the wholemeal loaf The inferiority was attributed to ick of B_2 vitamins

A solution of the present difficulty might be obtained s in Mesopotamia by the issue of bread composed of a ixture of white and wholemeal flour A loaf made om equal parts of each kind of flour would, in my pinion be much superior to the Ministry of Food einforced loaf since, among other advantages, it would ontain the vitamin-B_2 complex which is absent in the atter A loaf composed of 75% wholemeal and 25% hite flour would be still better and was shown in xperiments in Mesopotamia to be very palatable The erfect solution of the problem would be the universal se of a loaf composed of 100% wholemeal flour to which ublic opinion would soon be converted if the true facts ere fully understood The present stocks of white lour might be utilised by the provision of a mixed loaf, holemeal and white, as suggested

Wholemeal bread if properly baked has more flavour han white bread and there is no evidence that the mass f the people will not eat it It is important that the flour should be prepared so as to give a palatable and efficient product and that the baking process should be carefully regulated

The universal use of wholemeal bread is by no means an insuperable problem The education of public opinion, the coöperation of millers and bakers, and the application of experimental research so that efficiency may be ensured will do much to bring about this desirable reform The gain to the nation in improvement of health would be incalculable

London, W 1 WILLIAM WILLCOX.

MOSQUITOES INFESTING DEEP SHELTERS

SIR,—In your issue of Jan 4 Mr P G Shute described the infestation of deep shelters in London by the culicine mosquito *Culex molestus* May I point out that this mosquito was first located in Britain by Mr J Staley and myself in October 1934 when experimenting (at Hayling Island) with an egg-raft that we supposed to be of the ordinary domestic species *Culex pipiens* In the following year we obtained further specimens of *C molestus* both from eggs laid by a blood-gorged female caught in an hotel in Westminster and from larvæ collected in stagnant water adjacent to some mosquito-infested cottages in Hull

During the years 1938 and 1939 at the request of the entomological department of the Natural History Museum and with the coöperation of the London County Council, we extended our research to various Thames-side districts, notably Battersea, Bermondsey, Chelsea Deptford, Fulham Greenwich and Isleworth, in all of these districts many houses and institutions were found to be periodically invaded by hordes of fiercely-biting females of *C molestus* At the outbreak of war local authorities naturally diverted their attention to more important matters and these investigations were suspended

Both in the larval and adult forms *C molestus* and *C pipiens* resemble one another so closely that the presence of the former species in Britain was entirely overlooked up to November, 1934 The two species differ however in important respects *C molestus* is one of our worst biters whereas *C pipiens* rarely if ever attacks human beings its customary victims being birds Moreover, *C molestus* is both *stenogamous* and *autogenous* that is to say the adults will mate in a very small space (even in a test-tube) and the fertilised females are able to lay *some* eggs (about 70) without having had a preliminary meal of blood Of the 2000 odd species of mosquitoes known in the world only two besides *C molestus* have so far been found to be autogenous—namely the British species *Theobaldia subochrea* and the Australian species *Aedes concolor* Combining as it does the characteristics of stenogamy and autogeny *C molestus* is extremely easy to breed in small laboratory jars all the year round The methods of distinguishing *C molestus* and *C pipiens* from one another are fully described in my book "The British Mosquitoes" (British Museum, 1938) which was unfortunately in print before our Thames-side data were available for publication

In conclusion I may perhaps mention that the total number of British mosquitoes at present known is not 29 (as Mr Shute states) but 30, owing to our discovery of the species *Theobaldia longiareolata* at Portsmouth a few months ago JOHN F MARSHALL

British Mosquito Control Institute, Hayling Island

Infectious Disease in England and Wales

WEEK ENDED DEC 21, 1940

Notifications —The following cases of infectious disease were notified during the week smallpox, 0 scarlet fever 1496 whooping-cough 2395, diphtheria 1378 enteric fever, 16, measles (excluding rubella). 15,221, pneumonia (primary or influenzal), 970, puerperal pyrexia, 108, cerebrospinal fever, 133, poliomyelitis, 13; polio-encephalitis, 3, encephalitis lethargica, 16 (13 at Colchester), dysentery, 152, ophthalmia neonatorum 50 No case of cholera, plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Dec 27 was 2170, including scarlet fever 304 diphtheria, 325 measles 906, whooping-cough 109, enteritis 30, chicken-pox, 193 erysipelas 51 mumps, 31 poliomyelitis, 1 dysentery 4, cerebrospinal fever, 37 puerperal sepsis 8 enteric fevers, 2 german measles, 4 other diseases, (non infectious) 69 not yet diagnosed, 105

Deaths —In 126 great towns there was no death from smallpox 1 (0) enteric fever, 3 (1) from scarlet fever, 16 (0) from whooping-cough, 16 (1) from measles 39 (2) from diphtheria, 24 (1) from diarrhœa and enteritis under 2 years, and 30 (5) from influenza The figures in parentheses are those for London itself

There was 1 fatal case of enteric fever in Greater London and 1 in Oxford Liverpool reported 5 deaths from diphtheria, Birkenhead 4 and Birmingham 3 There were 5 deaths from whooping cough at Birmingham

The number of stillbirths notified during the week was 204 (corresponding to a rate of 43 per thousand total births) including 14 in London

WEEK ENDED DEC 28

Notifications —The following cases of infectious disease were notified during the week · smallpox 0, scarlet fever 1193 whooping-cough 1846, diphtheria, 1090, enteric fever, 20, measles (excluding rubella), 13 188 pneumonia (primary or influenzal) 857, puerperal pyrexia, 72, cerebrospinal fever 171, poliomyelitis 8, polio-encephalitis, 2, encephalitis lethargica, 2 · dysentery, 112, ophthalmia neonatorum 44 No case of cholera, plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Jan 3 was 2246, including scarlet fever 316 diphtheria 346 measles 907, whooping-cough 112 enteritis 31 chicken pox 203 erysipelas, 51 mumps 53 poliomyelitis 1, dysentery 10, cerebrospinal fever, 40, puerperal sepsis 8, enteric fevers 6; german measles, 3, other diseases (non infectious) 100 not yet diagnosed, 78

Deaths —In 126 great towns there was no death from smallpox or enteric fever 3 (0) from scarlet fever 16 (1) from whooping-cough 23 (4) from measles 30 (0) from diphtheria, 39 (2) from diarrhœa and enteritis under 2 years, and 40 (1) from influenza The figures in parentheses are those for London itself

Birmingham reported 9 deaths from diarrhœa 4 from influenza and 4 from whooping-cough There were 4 deaths from diphtheria at Liverpool

The number of stillbirths notified during the week was 161 (corresponding to a rate of 53 per thousand total births), including 8 in London

"The superior doctor serves the nation, the middle-grade doctor, the individual, the inferior doctor treats physical ailments"—Proverb from The Chinese Way in Medicine, by EDWARD H HUME (Oxford University Press)

Obituary

HERBERT TILLEY

M D LOND , F R C S

Mr Herbert Tilley, who died at Weybridge on Jan 6, at the age of 71, was one of the later generation of pioneers of rhino-laryngology When he qualified the new specialty was already somewhat grudgingly acknowledged, but Tilley did much to secure a wider recognition for it and to attract the right men to its service

Elliott & Fry

Born at Shepton Mallet, he was educated at Queen's College, Taunton, and at University College, London, where he won many scholarships He qualified in 1890 and took his M D the following year, obtaining his F R C S in 1898 For a time he practised in Hampstead but he was soon appointed to the staff of the Golden Square throat hospital where his junior colleagues have many pleasant memories of his kindness and helpfulness He left to return to his old hospital as the first specialist to be appointed surgeon in charge of the ear, nose and throat department He guided the department with enthusiasm and wisdom, and after its amalgamation with the Royal Ear Hospital he saw it fittingly housed, through the generosity of Mr Geoffrey Duveen, in a new building beside the hospital He was elected a fellow of University College, but outside his school he also held important posts He was laryngologist to the Radium Institute and consulting aural surgeon to the Ministry of Pensions He examined for the University of London, and with Mr Arthur Cheatle he was able to persuade the senate to allow otology, laryngology and rhinology to be taken as part of the M S examination His presidential address to the section of otology of the Royal Society of Medicine in 1919 was an impressive plea for the better teaching of the specialty; he urged medical schools to make an attendance of three months in the ear and throat department compulsory for their students His early experience in general practice had impressed on him the need of attracting to the specialty men with a thorough knowledge of general medicine and surgery, "for," he said, "we can expect little from those who, with a bare qualification to practise, at once focus attention on some special department of the body" He was a regular attendant at the Laryngological Society and later at the corresponding section of the Royal Society of Medicine , when he spoke at these meetings he always had something useful to contribute and was listened to with respect From 1931 to 1932 he served as president of the Medical Society of London, and he was also well known on the continent and in the United States where he was elected a member of the American Laryngological Society

For a long time Tilley felt that his connexion with the board of the Semon lecture trust debarred him from the lectureship But in 1934 he was persuaded to accept and his address on the inflammation of the nasal sinuses was an effective summary of his views on the pathology of sinusitis He contributed many articles to medical textbooks and he almost completely rewrote the fourth edition of De Havilland Hall's Diseases of the Nose and Throat A colleague writes "Tilley was a careful and accurate observer and possessed of sound common sense He had established a solid reputation as a clinician and obtained an extensive practice His charm of manner and attractive personality won for him the affection of his colleagues and of a large circle of patients

LOUIS HENDERSON MACDONALD

M B BIRM , LIEUTENANT, R A M C

Lieutenant L H Macdonald's death was announced in an Army casualty list dated Jan 6 He took his conjoint qualification in 1924 and graduated M B from the university of Birmingham the same year He held house-appointments at the Birmingham General Hospital and was for a time assistant medical officer in the V D department there He afterwards became assistant pathologist and bacteriologist to the Dudley Road Hospital, and a physician there remembers him as a quiet keen worker, always ready to help and a pleasant and agreeable colleague " But he was intensely reserved and had few intimate friends Four years ago he left Birmingham to set up in practice in Portsmouth where he enjoyed his work and was very happy

ROBERT BUCHANAN FORBES McKAIL

M B GLASG , D P M

Dr R B F McKail, who died on Jan 10, after a distressing and protracted illness borne with fortitude, was educated at Allen Glen's School In his student days at Glasgow University he won the Arnott prize, Black medal and Muirhead prize, and after he qualified in 1909 he worked for two years as demonstrator in the anatomy department In 1911, he entered the service of the Lancashire mental hospitals board at the county mental hospital at Prestwich and later served under the same authority at their hospitals at Winwick and Whittingham During the last war, he served as a captain in the R A M C in Gallipoli, Egypt, Sinai and Palestine He was twice mentioned in despatches, but his health suffered and he never fully recovered

On demobilisation in 1920, he was appointed deputy medical superintendent at the Calderstones Certified Institution for Mental Defectives—once again under the Lancashire mental hospitals board, and in 1933 was promoted to be the first medical superintendent of the Brockhall Certified Institution at Langho, near Blackburn In September, 1937, continued ill-health compelled him to retire and he returned to his native city of Glasgow

His wife died three years ago

A colleague writes McKail was a keen follower of sport and athletics and his varied interests made him a most acceptable social companion to all sorts and conditions of men During the last years of his active professional life, his knowledge, energy and mastery of detail were devoted to the preparation of the Brockhall extensions scheme , rapidly failing health prevented him from seeing the fruits of his labours But the institution now almost completed, will stand as a tribute to his wisdom and foresight

THOMAS LAWSON McEWAN

M B ST AND , D P H , F I C

Dr Lawson McEwan, who died on Jan 13, aged 48, was the first bacteriologist of the county of Devon and he did not live to see built the new laboratory which he had planned with so much care

McEwan was educated at the Harris Academy, Dundee, and at the University of St Andrews, where he graduated B Sc in 1914, with honours in chemistry, mathematics and physics He then proceeded to London where he continued to study chemistry and biology at King's College, University College and Birkbeck College Later he became principal assistant to the public analyst for the city of Westminster and for the borough of Fulham At the beginning of the last war he held a commission in the Argyll & Sutherland Highlanders, till at the end of 1916 he was transferred to the Ministry of Munitions as a research chemist The following year he went to the research department at Woolwich Arsenal, and for his work here he was elected F I C

He had always wanted to take up medico-scientific work but the war had interrupted this project Later however, he returned to St Andrews to study medicine He was an outstanding student, and in 1928 he graduated M B with special distinction, gaining the McEwan prize in surgery After serving as house-physician at Dundee Royal Infirmary, he became assistant to Prof W J Tulloch In 1930 McEwan was appointed bacteriologist to the Devon county council He organised this new department with great skill and enthusiasm and gradually built up a first-class laboratory

In 1919 he married Elizabeth Holt Ogilvy, who survives him with two daughters

Medical News

niversity of London

At recent examinations the following were successful —

M D

Branch I (medicine)—Margaret D Baber Univ Coll , and S Lawrie, Middlesex
Branch II (pathology)—S D Elliott, Univ Coll , and Herbert ɔencer St Mary s
Branch IV (midwifery and diseases of women)—Mary Kane ing s Coll and Cardiff , Kathleen M Robinson Roy Free and E J Thomas Guy s
Branch V (hygiene)—Kathleen M Hart, Roy Free

M S

Branch I (surgery)—A D Le Vay, Univ Coll

D M P

Douglas Andrew H F Francis and J J Richmond

ational University of Ireland

The honorary degree of D Sc has been granted to Dr ordon Holmes, F R S , and Dr F M R Walshe, " in view f their distinction as neurologists, and in recognition of their aluable contributions to medical literature," and to Prof rnest Hey Groves, " in view of his eminence as an orthopædic rgeon, and an internationally recognised authority on the terature of his subject "

The Minister of Health has made an order applying to the reater London evacuation areas the defence regulation hich provides for the compulsory evacuation of children ıffering in mind or body as a result of hostile attacks *Lancet*, 1940, 2, 816) The areas to which the regulation ow applies are

The City of London , the metropolitan boroughs of Battersea, ermondsey Bethnal Green, Camberwell, Chelsea Deptford, insbury Fulham Greenwich Hackney, Hammersmith, Hamp ead, Holborn Islington, Kensington Lambeth, Lewisham addington Poplar, St Marylebone, St Pancras Shoreditch outhwark, Stepney, Stoke Newington, Wandsworth Westminster nd Woolwich , the county boroughs of Croydon, East Ham and est Ham the boroughs of Acton Barking Brentford and hiswick, Chingford, Ealing Edmonton Erith Hornsey, Ilford eyton Mitcham Tottenham Walthamstow Wanstead and oodford Willesden and Wood Green and the urban district of enge and the evacuable parts of the boroughs of Barnes Becken am Bexley Dagenham Dartford Gravesend and Wimbledon, nd the urban districts of Crayford Enfield, Hornchurch Merton nd Morden, Northfleet Swanscombe Thurrock and Waltham oly Cross

Dr Allen Daley will take the chair when Lieut -Colonel C Temple, M Inst C E , addresses the Royal Society of ts on the municipal manufacture of humus from habitation astes The meeting will be held on Jan 29, at 1 45 P M , the house of the society, John Adam Street, Adelphi, C 2 On Feb 12 Mr G V Jacks, deputy director of the nperial Bureau of Soil Science, will speak on humus and the rmer On April 30, Dr O R Tisdall will read a paper on ie general practitioner and scientific thought

On Tuesday, Feb 4, at 2 30 P M , at 26, Portland Place, ondon, W 1, Sir Walter Langdon-Brown will deliver a Chad-ick lecture He will speak on mental health in war time urther particulars may be had from the secretary of the ust at 204k, Abbey House, Westminster, S W 1

Mr Somerville Hastings will be in the chair when the ociety for Cultural Relations with the U S S R meet at , Chandos Street, London, W 1, on Jan 31, at 2 15 P M rof F Wood Jones, F R S , Dr J Lipetz and Dr Joan cMichael will open a discussion on medical theory and actice in the Soviet Union

On Monday, Jan 27, at 2 P M , at the section of odontology f the Royal Society of Medicine, Mr A H McIndoe will ead a paper on plastic surgery in relation to fractures of the cial bones On Tuesday, Jan 28, at 2 P M , at the section f medicine, Colonel Lionel Whitby and Dr Janet Vaughan ill open a discussion on the therapeutic value of transfusion f derivatives of blood

The Royal Society of Edinburgh have appointed Messrs liver & Boyd (Tweeddale Court, Edinburgh) to be their ublishers Copies of the transactions and proceedings of the ociety will now be supplied by this firm

A meeting of the Medical Society of London will be held t 11, Chandos Street, W 1, on Monday, Jan 27, at 2 30 P M r Zachary Cope will speak on latent shock , Dr Wilfred akley on the use of delayed action insulins in war time , nd Mr Eric Samuel on X ray examination in relation to the reatment of air-raid casualties

George medals for gallantry during air raids have been warded to the following medical men Dr André Bathfield, sident medical officer at the Royal Chest Hospital, London , Dr H N Gregg, medical officer in the E M S at Coventry , and Dr Robert Lindsay, medical officer in a casualty mobile unit at Folkestone

The telephone number of the Emergency Bed Service is now BIShopsgate 8491

FACTS FOR THE TAXED —A thing that many a doctor lacks is knowledge about income-tax All you who think you pay too much—and legion is the name of such—are vehemently urged to look at Mr A L Boyden's book For, coming, as he does, to you straight from the Inland Revenue Boyden if anyone, can say exactly what you've got to pay Income Tax for Medical Practitioners London ' *The Practitioner* with Eyre and Spottiswoode Pp 147 6*s*

Births, Marriages and Deaths

BIRTHS

KEATINGE —On Jan 10, at Compton, Winchester, the wife of Major L R H Keatinge, R A M C —a son

MATTHEW —On Jan 15, at Inverness, the wife of Captain H J S Matthew R A M C —a son

STEWART —On Jan 15 at Lymington, Hants, the wife of Dr G R Shipley Stewart—a son

TILL —On Jan 9, at Witney, Oxon, the wife of Major A S Till, R A M C —a daughter

MARRIAGES

ELLIS—RUSSELL —On Jan 18, in London Richard White Bernard Ellis F R C P , to Audrey Eva Russell, M B

GRANT—KINGHAM —On Jan 16, at Farnham William Russell Grant M R C S , Captain R A M C , to Sheila Mary Kingham

HARGREAVES—BERRY —On Jan 16 at Northwood Anthony Hargreaves M B , Flying Officer R A F V R , to Anna Marcia Berry M B

HORTON—STERN —On Jan 18, in London, William Henry Horton to Ruby Olive Stern, M D

MORRIS—SMITH —On Jan 4, Robert Morris, M B , Lieutenant R A M C , son of Dr R A Morris, of Harrogate, to Doreen Smith

OLLERENSHAW—BLOUNT —On Jan 16 at Didsbury Gerald James Watson Ollerenshaw B M younger son of Mr Robert Ollerenshaw, F R C S , to Patricia Blount

DEATHS

ARCHER —On Jan 13, at Littleham, Exmouth, Edmond Lewis Archer M B Durh , formerly of Moonta South Australia, aged 91

DICKINSON —On Jan 21 in London, Thomas Vincent Dickinson, M D Lond , M R C P , aged 83 years

FRASER —On Jan 17, at Harpenden, Herts, Hugh Fraser, M B Aberd

HOLLAND —On Jan 16, Charles Thurstan Holland, Ch M LL D Lpool F R C S

LEWIS —On Jan 17 at Birkdale, Ernest William Lewis, M D Edin F R C S E , J P

LOGAN —On Jan 13, at St Anns, Carlisle, George Duncan Logan, M D , aged 81 years

MCEWAN —On Jan 13, Thomas Lawson McEwan, M B St And D P H , F I C bacteriologist and pathologist to the county of Devon

NEWNHAM —On Jan 11, at Clifton, Bristol, William Harry Christopher Newnham M B Camb aged 84

PAUL —On Jan 17, at Grayshott Hindhead, Frank Thomas Paul D Sc , Ch M Lpool F R C S

WILLIAMS —On Jan 16, suddenly at Peterston super Ely Glamorgan, George James Williams M D Durh , formerly of Haltwhistle, Northumberland aged 76

Appointments

BRICE HILDA, M B Manc R M O at Leicester General Hospital

COLLS, MARGARET, M R C S temp M O at the Women s Internment Camp, Isle of Man

GRANT, H M. M B Edin F R C S E surgical registrar at the Bolingbroke Hospital, London

LINACRE H L M B Sheff D A Mayo fellow in anæsthetics at the Royal Sussex County Hospital Brighton

MASON M L M R C S R M O at King Edward Memorial Hospital Ealing

RICHARDS D A , M B examining surgeon under the Factories Act 1937 for Appleby, Westmorland

*SHARPE WILLIAM M B Glasg , D P H at Monsall Hospital nr Manchester

STOTT C F M B Manc temp asst M O H for Stoke Newington

TEMPLE L J , M R C S R S O at the Kent and Canterbury Hospital

THOMPSON C G K M B Edin , D P H deputy M O H and asst T O for Gt Yarmouth

Middlesex County Council—The following appointments are announced

- CHAPPLE C F M B Adelaide F R C S E asst R S O at Central Middlesex County Hospital
- BAIRD R C M R C S resident casualty officer at Redhill County Hospital Edgware , and
- MCCLELLAND MARGARET M B Melb resident asst M O at Central Middlesex County Hospital

* Subject to confirmation

Notes, Comments and Abstracts

TECHNIQUE OF DIPHTHERIA IMMUNISATION

BY PERCIVAL V PRITCHARD, M D Edin, M R C P E, F R F P S G, D P H
DEPUTY MEDICAL OFFICER OF HEALTH FOR ST PANCRAS

I HAVE lately had many inquiries from doctors about the details of diphtheria immunisation and my object here is to supply the busy practitioner with some easily digested practical notes

Every year many children die from diphtheria or are left seriously crippled by it Babies under one year are seldom affected, but children from one to twelve years are commonly attacked, and the most dangerous period is between one and five After this age many children develop a degree of protection or immunity in a natural way by contact with small doses of the infection

THE SCHICK TEST

The Schick test is performed on children over five as a routine to see if a course of immunisation is necessary *It is also carried out about three months after the final* injection of a prophylactic course at all ages to see whether immunity has been established In any series of cases there is always a small percentage of failures and this test will point these out They should, of course, be given a further course of treatment The test is carried out as follows

Toxin and control can be bought ready for use Into the left forearm 0 2 c cm toxin is injected intradermally Into the right forearm 0 2 c cm of the toxin which has been heated to destroy its specific effect is injected as a control Readings can be made at about 48 hours in an emergency If the result is Schick-positive it can be taken as final A negative result at this stage is unreliable and may change to positive in the next few days A reading seven days after the test is safest

If there is insufficient diphtheria antitoxin present in the blood of the patient the toxin of the Schick test will give a local positive reaction resulting in redness and infiltration at the site of injection This may begin to show itself in 48 hours If present at all it will be there by and on the seventh day It fades in a few days, leaving behind a faint pigmentation and some scales When nothing happens locally the reaction is called negative Considerable experience is required for accurate reading and Schick-testing is usually carried out at special clinics There are two possible readings on each arm, negative (−) and positive (+) Positive results can be (+) or (+ +) depending on the size of the reaction Four interpretations of these combinations are recognised

Left (−), *right* (−) = Schick negative The person is immune The test shows that his blood contains sufficient antitoxin to combat any toxin which would be produced by an attack of diphtheria

Left (+) *or* (+ +), *right* (−) = Schick positive The person is liable to contract diphtheria He should be given a course of immunisation to develop a supply of antitoxin in the blood

Left (+ +), *right* (+) = Schick pseudo positive This is read as a positive reaction, the person being looked upon as susceptible

Left (+), *right* (+) = Schick pseudo negative This is interpreted as a Schick negative result

CHOICE OF A PROPHYLACTIC

I prefer the *toxoid-antitoxin floccules* (T A F) This preparation's great advantage is its freedom from unwanted reactions It is given in three doses of 1 c cm each at fortnightly intervals

Alum-precipitated toxoid (A P T) was originally used for the one-shot method of immunisation I am not going to venture into any of the bitter arguments which have been centred around this material and method I have never favoured it because it has a reputation for causing local nodular reactions Of late its sponsors have advocated turning it into a two-shot method with a first dose of 0 1–0 5 c cm depending on the age, and a second dose of 0 5 c cm four weeks later Some authorities consider these doses to be too high a advise only 0 1 c cm and 0 3 c cm for children and 0 c cm and 0 5 c cm for adults

Toxoid-antitoxin mixture (T A M) is generally c sidered to be less efficient than T A F or A P T in production of immunity

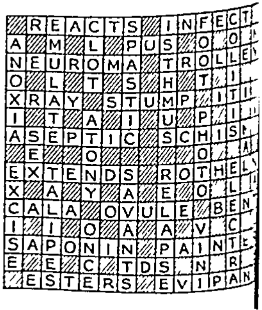
Formol toxoid (F T) has not been used as extensiv in this country as the other preparations It is said give a high percentage of severe reactions particularly older children and adults The latest advice is to g it in three doses of 0 2 c cm , 0 4 c cm and 0 6 c cm w three weeks between the first and second doses and t weeks between the second and third

Whatever material is used it is given intramuscular The makers supply literature with full instructions have given my views but it must be remembered t each of these preparations has its supporters prophylactic course does not guarantee immunity is therefore important that the Schick test should carried out about three months after the last injecti otherwise from time to time immunity will be incorrec presumed with dangerous possibilities

COÖPERATIVE SOCIETIES AND THE SALE OF DRUGS

WHEN the *Pharmacy and Poisons Act 1933* w drafted the Pharmaceutical Society agreed to a provisi that a pharmacist should not conduct a branch sh where drugs were sold under unqualified managemen One would suppose that, sauce for the goose being sau for the gander, it was only right that the same princip should apply to shops belonging to persons who were n pharmacists, but it now appears that such was not t intention of the Government It is now admitte that when the bill was in Parliament the Governme and the all-powerful cooperative societies overlooked t fact that certain clauses would prevent the sale of dru by these societies, the grocery departments of the b departmental stores and like concerns A judgmen given in 1938 by the High Court (Hygienic Stores Ltd Coombes) declared in effect that it was useful for suc traders to sell drugs in grocery departments Since th interpretation the Government have informed th Pharmaceutical Society that it was not intended by the to prevent, by the 1933 act, the sale of drugs in th grocery sections of such concerns and they have no intimated that the act ought to be amended by provision to the effect that where drugs (other tha Part 1 poisons) are sold " on registered premises inci dental to and as a subsidiary part of a business of different class carried on by the authorised seller o poisons, nothing in sections 8, 9, and 10 of the act shal require such sale of drugs to be under the persona control of a registered pharmacist subject to the observ ance of the following conditions (*a*) that the drugs ar sold in closed containers as closed by the manufacture or other person from whom they were obtained, (b that no drugs are compounded or dispensed on th premises, and (*c*) that no title, emblem or description the use of which is restricted by section 3, is used i connexion with the business carried on in these premises " The whole question was reviewed at th society's January council meeting and it was decided to ask the Home Office to receive a deputation from th council to discuss the matter further on the basis of the proposed amendment From the fact that the Govern ment are desirous of a settlement in war-time it may b assumed that they regard the question as an urgent one

THE
LANCET
CROSSWORD
LAST WEEK'S
SOLUTION



ORIGINAL ARTICLES

AN OUTBREAK OF "PEMPHIGUS NEONATORUM" IN A MATERNITY HOME

By S. D. Elliott, M.B. Lond., D.P.H.
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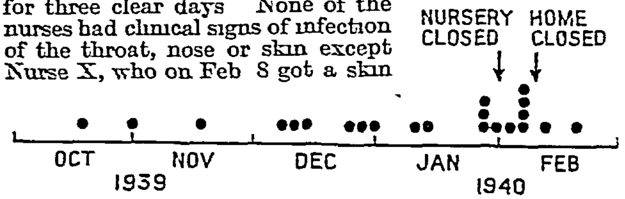
This outbreak of mild staphylococcal skin infection, which affected 22 infants, 2 mothers and a nurse, occurred between October, 1939, and February, 1940, at a maternity home. We use the word "pemphigus" because it is in common usage to describe this type of skin infection in the newly born. The term "bullous impetigo," often used alternatively, does not properly describe the condition, because in this epidemic, which appeared to conform fairly closely with the mild type of pemphigus described in the Ministry of Health's memorandum (1925), bullæ did not appear. We agree with Carter and Osborn (1938), who described an epidemic in many respects similar to ours, when they propose the term "contagious subepithelial dermatitis."

HISTORY OF THE OUTBREAK

The home, formerly a private residence, has beds for 38 women. It is fully equipped, adequately staffed with midwives and nurses, has an isolation-room, and the beds are properly spaced. The nursery, with accommodation for 20 infants, is 24 by 18 ft. and 11 ft. high, with a window 8 ft. square on one side facing the door. A day and a night nurse were on full-time and two other day nurses on part-time duty in the nursery. The night nurse (Nurse X) was on duty in the nursery from the date it opened (September, 1939) until Feb. 8, 1940, when she was suspended from duty because of an infective skin lesion. On Jan. 30 the nursery began to be used for infected infants only, the healthy infants, including the 4 born after that date, being isolated in another room. Nurse X was thus the only nurse who was continuously (except for days off duty after the occurrence of each case of infection) in charge of all the infants born in the home except the last 4, coming into close contact with them during bathing, changing napkins, feeding and so on. Of the last 4 infants born, only 1 became infected, and it is of interest that this infant was looked after by the nurse who shared a bedroom with Nurse X. These points are emphasised in view of the bacteriological findings and the sites of the primary skin lesions.

The first baby to show signs of infection was born on Oct. 16, 1939. The mother had 3 other children who, just before the confinement, had been admitted to a local hospital with profuse impetigo. It was found out later that the father had been in the habit of visiting them in hospital and then going on immediately to the maternity home to see his wife and baby. This infant when six days old developed an infective eruption from which a pure culture of *Staphylococcus aureus* was obtained; these organisms were not examined in further detail. Both the mother and infant were removed to a hospital whence four days later they were discharged, the rash having dried up and almost gone. The dates of the first appearance of the infection in the 22 cases is shown in the figure and table I. The last of the babies to become infected was born on Feb. 11. The mother was admitted although the home had been closed to new admissions since Feb. 2, because on her arrival the baby was on the point of being born. On Feb. 14 the home was temporarily closed for fumigation. No fresh cases have occurred since it was reopened on March 11.

The infected babies were removed, directly they showed signs of the disease, to a separate ward in which they were nursed by a separate nursing staff. After Jan. 30, as already stated, this arrangement was reversed, the nursery being reserved for infected babies only. Isolation was not always complete, however, since all those affected were breast-fed and the mothers of infected and uninfected babies sometimes occupied the same ward. Moreover, the separate nursing staff lived in the same quarters as the ordinary nursing staff and fed at the same table. Whenever a case occurred the day and night nurses who had been in contact were at once taken off duty, followed the usual routine of disinfection of person and clothing, and were sent away from the home for three clear days. None of the nurses had clinical signs of infection of the throat, nose or skin except Nurse X, who on Feb. 8 got a skin lesion on the back of her hand and was forthwith suspended from all duty. A similar lesion had appeared a week before on her elbow; this, unfortunately, she failed to report, and it remained unnoticed. From the hand lesion staphylococci were isolated which corresponded serologically with those recovered from the eruptions in the infants.



Dates of onset in the 22 cases

In February two mothers whose babies were affected developed a similar eruption on the skin of the breast; both infants were breast-fed. In both cases the infection appeared in the month *after* the baby had contracted the disease.

Face-masks and gowns were always worn by nurses on duty in the nursery but rubber gloves were not used until mid-way through the outbreak, after which they were always worn when handling the infants. This measure did not have any observable effect on the spread of infection.

TABLE I—INCIDENCE OF PEMPHIGUS AT THE HOME

Month	Babies developing pemphigus	Babies born at the home
September	0	34
October	2	32
November	1	17
December	6	19
January	6	11
February	7	4

SKIN LESIONS

Some exposed area of skin—the face, scalp, neck, hand, buttocks and thighs (exposed during changing napkins)—was almost always the first to be affected. After the occurrence of the first case a careful look out was kept for the first sign of a rash, so that the primary sites were noted and recorded. In 7 it was on the face, in 1 the scalp, in 2 the neck, in 7 the hand, and in 1 each the buttock, thigh, elbow and shoulder. In the face it was often on the margin of the eyelid or the outer canthus; on the hand it was usually at the base of a finger-nail. A small clear-cut red area, a small red spot, or a small crop of confluent spots first appeared. The time of appearance varied from the second (1 case) to the twelfth day (2 cases) after birth, more than half being from the fourth to the sixth day inclusive. In a few hours the cuticle over the affected area became yellowish, wrinkled and loose. The quantity of fluid secreted amounted to no more than a film sufficient to separate and slightly raise the cuticle, only once during the whole outbreak was a small blister, of very short duration, seen. The cuticle quickly broke, exposing the superficial layers of the cutis. The exposed areas were at first bright red and moist, but quickly dried and faded and healed rapidly. The primary lesions were almost invariably followed by similar but more extensive lesions, and in this way large areas of skin, especially over the trunks and buttocks, were denuded of epidermis None of the infants appeared ill or had pyrexia or other signs of infection, all continued to thrive and gain weight, and none (except 2 premature infants) remained in the home more than fourteen days The breast eruptions of the 2 mothers were confined to the superficial layers of the skin and did not lead to abscess formation Indeed, no breast abscess or other type of septic infection occurred in the home throughout the epidemic, and the incidence of puerperal pyrexia did not rise In the infected nurse the skin lesion on the hand appeared to be rather more deeply seated but when seen there was no pus

BACTERIOLOGICAL INVESTIGATION

Exact bacteriological details are available only for the cases occurring during February, at the end of the outbreak Swabs from the skin lesions were taken for examination The cases examined in this way included the last 8 infected infants, the 2 mothers with skin lesions on the breast and the nurse (Nurse X) with a lesion on the back of the hand

The swabs were inoculated on nutrient agar and 5% horse-blood agar plates which were incubated at 37° C for eighteen hours and thereafter left on the bench for several days to facilitate the production of pigment in colonies of staphylococcus Representative staphylococcal colonies were selected and tested for fermentation of mannitol and coagulase production All "coagulase positive" strains were identified serologically by one of us (E H G) by the slide agglutination method (Cowan 1939), dividing the strains into the three main types I, II and III, and into additional subtypes according to the reactions with absorbed sera (Gillespie and others 1939) The sera were supplied by Dr S T Cowan of the department of bacteriology and preventive medicine, Manchester University

From all cases except one almost pure cultures of *Staphylococcus pyogenes* were obtained * These produced golden pigment on agar, fermented mannitol slowly (3–5 days) and coagulated human plasma They also produced a narrow zone of hæmolysis on horse-blood agar but the strains were not tested for soluble hæmolysin Serologically they all belonged to type IIIc (Cowan) (table II) In the one exception which gave a few colonies of *Staph saprophyticus albus* the lesion had been painted with an antiseptic immediately before the swab was taken

TABLE II—STAPHYLOCOCCI ISOLATED FROM SKIN LESION IN 11 CASES

Source of staphylococci	Cases examined	Cases yielding *Staph pyogenes*	Serological type (Cowan)
Infants' skin	8	7	IIIc
Mothers' breast	2	2	IIIc
Nurse's hand	1	1	IIIc

NASAL CARRIERS

McFarlan (1938) and Gillespie and others (1939) have shown that *Staph pyogenes* is present in the nose of over 40% of the population It was possible that amongst the nurses there was a carrier of the causal strain of staphylococci Throat and nose swabs were therefore taken from the entire nursing staff, but in no instance was a profuse culture of staphylococci obtained from the throat * *Staph pyogenes* was obtained from 9 nurses, the incidence of serological types being type I, 4 times, *type IIIc, once, type IIId, 3 times*, and an unknown type once One colony only was identified from each culture

The nurse found to be harbouring *Staph pyogenes* type IIIc in the nose was Nurse X She had, at the same time, a staphylococcal lesion on the hand and a week before had had a similar lesion on the elbow Type IIIc staphylococci were recovered from her hand but the elbow was not investigated

AIR INFECTION

Blood-agar plates were exposed to the air in the home during the outbreak on one occasion from 6 A M until 12 noon, two plates being exposed in each room tested They were subsequently incubated overnight at 37° C after which 2 representative staphylococcal colonie resembling those previously isolated from the skin lesion cultures were selected from each plate and teste for coagulase production, coagulase-positive strain were then identified serologically

Staph pyogenes type IIIc was recovered from th plates exposed to the air in the nurses' dining-room, nursery containing 2 infants with skin lesions and a war accommodating 2 mothers both with breast eruption and 1 with the same staphylococcus in the nose W were unable to recover this type of staphylococcus from plates exposed in 2 unoccupied wards or in a ward containing an uninfected mother Swabs from doo handles, bed linen and furniture in wards containin infected patients also failed to reveal the presence of thes staphylococci, only 1 colony was tested from eac culture taken from these situations

DISCUSSION

Although a full bacteriological investigation was onl made in the later stages, it is likely that the whole outbreak was due to *Staph pyogenes* type IIIc (Cowan Skin carriers of *Staph pyogenes* are fairly commo comprising 19 5% of a group of 159 students examined b Gillespie and others (1939), of these carriers about on in ten were carriers of type IIIc The isolation in profus culture of this serological type from 10 out of 11 cases i thus very unlikely to have been due to chance It wi be recalled that in the single exception the lesions ha been painted with an antiseptic immediately before th swab was taken

It is impossible to determine conclusively the source o the means of spread of the infection There were a least two possible sources of primary infection Th first was the 3 cases of impetigo occurring outside th hospital, the infection being introduced by the father o the mother This point was not investigated Th second possible source was the nurse from whose nos and hand lesion *Staph pyogenes* type IIIc was isolated Gillespie and others (1939) have shown that staphylococcal nasal carriers tend to persist and that skin carriage i closely related with nasal carriage Provided the nurs was a chronic carrier before the outbreak, her close contact with the infants would have given ample opportunity for infecting them Alternatively she may hersel have been infected by an infant during the early stage of the outbreak There are three possible means o spread—by contact with the carrier nurse, through contaminated garments, gowns, gloves, hands and so on, an by the air The last two involve the possibility of case-to-case transfer The presence of the causative organism in the air of the wards in which the cases occurred and i the nurses' dining-room indicates the prevalence of tha particular strain of staphylococcus in these situation during the outbreak and suggests that aerial transmission may have been a factor in the spread of the disease On the clinical side the outstanding feature of the outbreak was the mildness, even triviality of most of th cases, in 10 there was only one spot (in half of them o a finger) which was well in three days It is easy t overlook such a trivial case and to fail to realise that suspicious spot may be the prelude to an epidemic an the danger signal that a source of infection exists

Although inconclusive, the available evidence suggest that contact infection by Nurse X was an importan factor in maintaining this outbreak and may even hav been the original source of infection

SUMMARY

An outbreak of skin infection resembling pemphigu neonatorum occurred in a maternity home, 22 infants, mothers and 1 nurse were affected

Profuse, almost pure cultures of *Staph pyogenes* wer obtained from the lesions in 10 out of 11 cases examine bacteriologically and all were found to be type III (Cowan)

A nurse who had two skin lesions was a nasal carrier staphylococci of the same type Staphylococci of th type were also recovered from plates exposed to the a during the outbreak in two wards in which were infecte patients and in the nurses' dining-room These organism

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* Hæmolytic streptococci were never isolated from the throats or noses of the nursing staff or from the skin lesions of the infants, mothers or nurse X

were not isolated from the air of two unoccupied wards or a ward containing an uninfected patient

The evidence suggests that the nurse may have been the source and also the means of spread of the infection

Our thanks are due to Dr S T Cowan for the use of his staphylococcal type sera for this investigation

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OPIUM AS A PREANÆSTHETIC SEDATIVE IN CHILDREN

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Preanæsthetic sedation in children has always presented a problem to the anæsthetist Nobody likes seeing a terrified child arriving crying at the operating-theatre, as so often happens when no premedication, or only an injection of atropine, has been given Conversely the administration of an anæsthetic to a child deeply under the influence of some hypnotic is not without danger

The barbiturates, especially Nembutal, have been used widely as a preanæsthetic sedative for children but in our experience the action of this group of drugs is unreliable After an adequate dose a child may be either asleep or restless before operation and postoperatively either recover quietly or be difficult to control for a time, one noisy patient is enough to upset an entire children's ward Another difficulty is the impossibility of persuading some children to swallow capsules even when disguised in jam or sweets Rectal paraldehyde and Avertin cannot always be given in a busy children's ward and are certainly not the preanæsthetic of choice in every case

Opium derivatives are seldom administered to children, possibly because of a traditional prejudice against them, but investigation has shown (B C Leech 1935, C H Robson 1936) that these drugs are extremely well tolerated The requisite dose consistent with safety depends on the patient's basal metabolic rate, and the relatively high rate found between the ages of 1 and 20 years when compared with that of adult life has been amply shown in the work of Du Bois and Benedict (1924) The rates of infants aged 1–3 months and 1 year are respectively the same as those of adults aged 80 and 20 years Between 1 and 20 the rate rises sharply to a maximum at 6 years, declines up to 12 years, and reaches almost the same high level again at puberty before the gradual decline towards old age We found that whereas an adult weighing 133 lb (average) took morphia gr ⅙ or Omnopon gr ⅓ satisfactorily a child of 1 year (average weight 20 lb) tolerated morphia gr 1/40 or omnopon gr 1/21 equally well The table given here is based on that in Leech's article (1935), the dose of morphia in each case being the nearest convenient fraction of gr ¼ or gr ⅙ to the appropriate calculated dose The omnopon dosage was based on the fact that gr ⅓ of this drug contains morphia gr ⅙, plus the other active principles of opium, and was therefore usually just under double that of morphia

To inhibit mucous secretions, hyoscine was given in properly balanced doses with the opium derivatives The drug is a metabolic stimulant, but this action is counterbalanced by its power to reduce emotional excitement, thus the sedative action of the opium is left unimpaired and can be exercised to the full Furthermore having no vago-inhibitory action, hyoscine does not produce tachycardia, as atropine does occasionally when used alone Many anæsthetists now avoid atropine as being too stimulating to be a good preanæsthetic

RESULTS

The table shown here was used with satisfactory results in a series of 600 children aged from 1 month to 16 years There were a few failures at the beginning from over-caution and under-dosage Most of the children arrived in the theatre in a drowsy and unapprehensive state, taking a detached view of the proceedings, a small proportion was asleep and not easily disturbed Inductions were smooth, amount of anæsthetic used reduced, and postoperative consciousness quickly regained with a minimum of restlessness, this last point is valuable after tonsillectomy In some minor procedures, such as the changing of dressing and plaster, these drugs were sufficient unsupplemented by anæsthesia Postoperatively, the retrograde amnesic effect of hyoscine has been present in most of our cases a fact testified to by the ward nurses who get this information easily in the course of daily routine The anæsthetist is usually confronted with a barrier of shyness when he makes a personal quest for information

The table doses were slightly exceeded without incurring dangerous symptoms in children who were obviously excitable and had an increased B M R, and in those who were overweight for their age-group (excluding the over-adipose who often tend to be under-developed in all other respects and may require reduced dosage) No instance of abnormal B M R due to endocrine disturbance was encountered in this series

DOSAGE OF MORPHIA OR OMNOPON WITH HYOSCINE ACCORDING TO AGE

Age (years)	Average weight	Either morphia (gr)	or omnopon (gr)	With hyoscine (gr)
Up to 6/12	Variable	Not tried	1/30 (not tried under 3 months)	1/1200–1/900
6/12–1	18½ lb	Not tried	1/30–1/24	1/900
1–2	22 lb	1/40	1/24–1/21	1/600
2–4	2 st 2¾ lb	1/32	1/18–1/15	1/600
4–8	3 st	1/20	1/12–1/9	1/450
8–12	4 st 5½ lb	1/16	1/9	1/450
12–16	6 st 6 lb	1/12	1/6	1/300

A few emergency cases with pain and fever benefited less than other children from the doses given presumably because their B M R was raised but for reasons of caution no attempt has so far been made to increase the dosage Patients of advanced development in the 12–16 year group often took satisfactorily the full adult dose of omnopon gr ⅓ or morphia gr ⅙ with hyoscine gr 1/150

It is, of course, important that the fractional doses of drugs should be accurately worked out To avoid confusion and mistakes we employ the method practised at this hospital for many years, of double check for every injection given

SUMMARY

Opium derivatives are well tolerated by children.

Dosage depends on the basal metabolic rate, which increases to a maximum at the age of 6 declines up to 12, rises again during puberty and then declines throughout life

The appropriate dosage of morphia, omnopon and hyoscine were calculated for children of all ages under 16

Morphia and hyoscine or omnopon and hyoscine administered in the calculated doses were satisfactory as preanæsthetic sedatives in 600 children between the ages of 1 month and 16 years

Our thanks are due to Dr I W Magill for suggesting this work and for his help and criticism, and to Dr J B Cook, medical superintendent of the West Middlesex County Hospital, for permission to publish this paper We also wish to thank the nursing staff for their coöperation

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INJURY TO THE CENTRAL NERVOUS SYSTEM BY BLAST

OBSERVATIONS ON A PHEASANT

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BLAST effects from high explosives, which produced no marks of external violence but nevertheless caused instantaneous death, were described in the last war Examples are also cited in which death was not immediate, and in some of these evidence of injury to the central nervous system was apparent during the hours or days preceding death That definite pathological changes in the central nervous system can be caused by blast was shown by Mott (1916 and 1917) when he recorded the macroscopic and microscopic abnormalities in brains and spinal cords of soldier casualties His findings were widely and uncritically accepted as the explanation for the variable and bizarre symptom-complex popularly referred to as " shell shock "

Again in this war there have been reports of the damaging effects of blast on vertebrates The human material studied has been largely from fatal cases Damage to the lungs characterised by alveolar ruptures and hæmorrhages has been the consistent and dominant feature Hadfield, Ross, Swain and Drury-White (1940) cited 10 cases of sudden death in persons subject to the blast effect of high-explosive bombs In none of these was there any evidence of external trauma , there were gross hæmorrhagic lesions in both lungs in all, and blood-stained secretions in the upper air-passages in some Microscopic examination of other tissues was not mentioned in this preliminary report, but its authors felt that the lung damage, even though severe in some cases, was not sufficient to cause sudden death They looked on this finding rather as an unmistakable indication that the patient had suffered considerable blast effect " It seems more likely," they conclude, " that blast produces death by interfering with some vital tissue or centre in which, from the extreme rapidity of action, structural changes are unlikely to be found " Falla (1940) reported a case with capillary hæmorrhages in both lungs due to blast and Zuckerman (1940) has published his experimental findings in animals subjected to blast He found extensive hæmorrhages in the lungs in all fatal cases and less severe lesions in animals surviving the immediate blast effect The severity of the pulmonary lesions was roughly dependent on the nearness of the animal to the explosive discharge No detailed mention is made in this report of examination of other tissues Zuckerman concludes from these experiments that it is the pressure component of the blast which bruises the lungs by its impact on the body wall

We have seen a small series of patients who have been exposed to blast and have exhibited a variety of neurological abnormalities Some, without showing focal signs, have simply been apathetic and indifferent, others have been depressed, and one, seen some days after the injury, had xanthochromic spinal fluid although there was no mark of external violence to the head or spine In another there were signs of spinal-cord damage limited to the anterior horn cells We have theorised that the symptoms might be due to the hydraulic-like pressure on the central nervous system in its firm encasement, resulting from the sudden compression of the thoracic cage with its consequent violent back-pressure on the venous side

The neurosurgeon is all too familiar with the sudden and alarming herniation of the brain that can take place through a widely opened dura when a patient under local anæsthesia coughs unexpectedly, and he is also familiar with the changes produced in the circulation in the meningeal racchidian veins of the vertebral extradural space and in the circulation of the spinal cord itself in such a situation The sudden compression of the thorax forces blood out through the various venous channels, valveless or incompetently valved, that drain the cranial cavity and the spinal canal This results in a sudden and striking increase in intracranial and intraspinal pressure This pressure in the closed intracranial and intraspinal cavities would presumably be incomparably greater when caused by a blast wave than when produced by coughing, in that the compression of the body surface generally would prevent the escape of blood into the extremities and abdomen, and intracerebral hæmorrhages may certainly result from paroxysmal coughing in children with whooping cough

THE BLASTED PHEASANT

We have collected a bit of evidence from the study of a pheasant which was suffering from blast effect, which lends some support to the speculations advanced with regard to the mechanism of injury The bird was found ninety feet from the edge of a bomb crater twelve hours after two large bombs had been dropped in a wooded patch the previous night There was no way of determining how near to the explosion the bird had been It was standing on both legs with the eyes closed most of the time (fig 1) It did not move when approached and there was no reaction of fear or resistance when it was picked up When placed on its feet and pushed along it would take a few unsteady steps with legs tending to cross and then came to a standstill It could be placed in any position and would remain in that position until moved Even when placed on its back and in other unusual positions it exhibited a waxy flexibility that closely resembled the catatonic patient (fig 2) Our zest for a thorough anatomical scrutiny of the bird was surpassed only by the gastronomical designs of the gamekeeper who happened upon it at about the same time A compromise was effected and an hour after it was found (13 hours after the bombing) the bird was killed by cutting the large vessels in the neck and allowing it to bleed freely The brain was carefully removed with the dura intact The feathers were plucked and a thorough search revealed no external evidence of trauma All organs were removed and together with the brain placed in 10% formalin

Gross findings —Discoloration of the undersurface of the forebrain beneath the dura was the only gross finding in the uncut brain Both lungs showed much hæmorrhagic congestion—the left one appearing solid and beefy red, resembling the stage of red hepatisation in lobar pneumonia There were no hæmorrhages along the ribs nor were there any fractured ribs No gross lesions were observed in the other organs On sectioning the brain there were gross hæmorrhages *in the forebrain* extending backwards as far as the ventricle (fig 3) No hæmorrhage could be seen macroscopically in the mid brain or cerebellum Cut sections of both lungs showed extensive hæmorrhagic consolidation (fig 4) The heart, liver and spleen showed nothing abnormal macroscopically The sections were embedded in celloidin and cut Hæmatoxylin - Van Gieson stains were done on all tissues and some sections of the brain were also stained with toluidin blue

Microscopic findings —*Brain* Throughout the cerebrum the capillaries

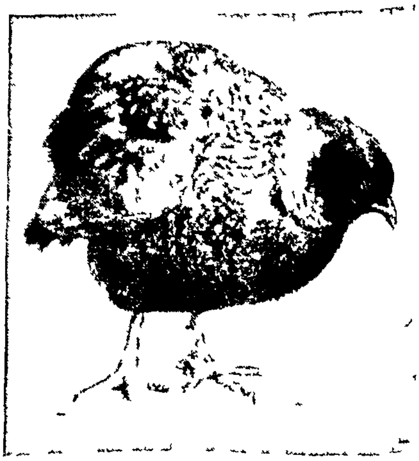

FIG 1—Position of pheasant when found Note dejected appearance and closed eyes

FIG 2—One of several attitudes maintained indefinitely after posturing

re congested and in the forebrain on both sides ere were numerous hæmorrhages of varying sizes ese seemed to be chiefly associated with the small ins and to a lesser extent the capillaries Many these formed a collar about the vessels with the ood-cells extending outwards and separating the uroglial framework about them No consistent ange could be seen in the nerve-cells with the stains nployed We were struck by the presence of numerous emorrhages surrounding the ventricle in the hypo- alamic region In two areas, clusters of blood-cells were nging to the inner surface of the ventricle In the rebellum four small hæmorrhages were found in one ction *Lungs* Massive hæmorrhages were found in oth lungs In many areas the small bronchioles and ronchi were occluded with blood and mucus Many lveoli were ruptured in addition to containing red blood- ells *Heart* Deep in the muscular layer of one entricle there were numerous small hæmorrhages hese were associated with very small vessels Other- ise the vessels and musculature appeared normal

FIG 3—Section through forebrain showing hæmorrhagic area

DISCUSSION

This report is presented to call attention again to the fact that lesions of the central nervous system can be produced by blast Though pulmonary damage is apparently a constant finding and at times is very extensive it seems unlikely that it is responsible for either sudden death or later fatalities except in a contributory way It seems likely that under certain conditions the hydraulic-like force acting on the central nervous system may, when of the right degree cause cessation of nerve-cell activity without producing macroscopic or microscopic evidence of injury—in other words, it may produce the clinical picture of concussion

In the two cases reported by Mott (1917) both of the soldiers were exposed to the blast of high explosive shells Neither showed external signs of injury The first man was admitted to hospital in a state of acute mania and died suddenly 24 hours later The only gross pathological finding outside the brain was a large hæmorrhagic area in the lower lobe of the left lung Both lungs were œdematous Summarising the histological changes in the brain Mott reported " vessels of the pia-arachnoid membranes of the brain are congested and there are scattered sub pial hæmorrhages of microscopic size almost everywhere In the white matter of the corpus callosum, the internal capsule, the pons, and medulla there are seen congested veins and hæmorrhages into the sheaths of these vessels with occasionally extravasation of blood corpuscles into the adjacent tissue " The second patient became comatose immediately after an explosion and died the same day without regaining consciousness In this case only the examination of the brain is reported Here again the striking finding was the presence of hæmorrhages of varying degree into the substance of the brain

A third case is described in the same article by Mott A soldier was brought in from no man's land with a superficial graze over the spine of the left scapula and a small "in-and-out" wound of the right gluteal region He was mentally clear but drowsy with "halting speech" There was complete paralysis of the legs and abdominal muscles and the left side of the face Power in both arms was diminished The level of complete anæsthesia was at the umbilicus Rectal and vesicle sphincter control were lost This patient gradually became comatose and died seven days later A complete post mortem examination was made and nothing to account for death was found Sections of the spinal cord from D 8 to L 2 inclusive were examined microscopically and the appearances, though varying in intensity, were similar in all of them On the surface there was evidence of subarachnoid bleeding The surface veins were congested though the arteries and capillaries were relatively empty "In places," Mott wrote, "the veins could be seen ruptured and in some sections intraradicular hæmorrhage was observed In the substance of the spinal cord itself were numerous minute hæmorrhages, varying in size from a pin head, and visible to the naked eye, to a pin-point, invisible except by the aid of the microscope The hæmorrhages are seen especially in situations where the surrounding tissue offers least support, consequently they are found in the grey matter of the anterior horns, but especially at the base of the posterior horn near the central canal "

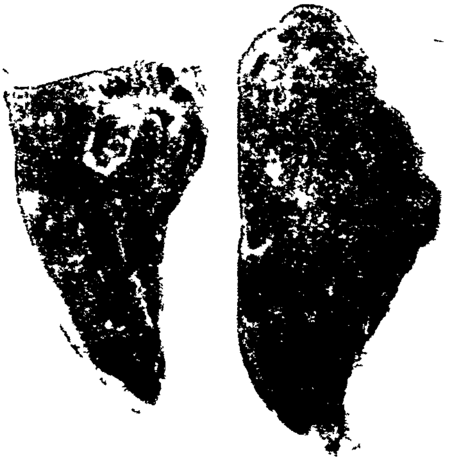

FIG 4—Sections of right and left lung showing hæmorrhagic consolidation.

Mairet and Durante (1917, cited by Mott) subjected rabbits to blast by means of melinite explosions Histological examination showed diffuse hæmorrhages in the lungs, spinal cord and brain hæmorrhage in the kidney was found in one animal

Mott thought that the aerial compression generated by high explosives might be transmitted to the fluid about the base of the brain, causing shock to the vital centres and death He considered too that the forces of compression and decompression might both act on the central nervous system producing arterio-capillary anæmia, venous congestion and rupture of small vessels He did not explain, however, how the forces were brought to act on the circulation

We have purposely omitted any consideration of the decompression effect or "suction wave" in our discussion, although it is, together with the compression effect, embraced in the term "blast" Lieut -Colonel Arthur James [1] after experimenting with low-pressure effects, feels that the negative pressure wave following the positive one may, in the suddenness of the change, be an important factor in cerebral injury But there is sound experimental evidence that this suction effect is of little significance in the production of the pulmonary lesions (Zuckerman 1940)

From the experimental reports and case-records to date it seems clear that the effect of the blast wave on man and animals sufficiently near and directly in the path of this violent compression force may be so damaging as to cause instant death Lesser degrees of injury may also occur, as exemplified by the cases which live for hours or days after exposure and show definite pathological lesions in the post-mortem examination, by cases which have coexisting wounds from the shell or bomb fragments which overshadow the signs of the lesions produced by the blast alone, and finally, by the milder cases which, recovering without showing definite signs, make it impossible to prove the existence of minor lesions or to establish the fact that concussion of the central nervous system was produced

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[1] Personal communication

We are diffident to suggest, from our circumstantial evidence, that blast affecting the central nervous system can produce a symptomatology ranging from slight mental disturbance to signs of damage to the anterior horn cells Yet we have encountered such varied signs in our small series of patients exposed to blast, and on theoretical grounds can visualise pathological and physiological disturbances as varied as the symptomatology It is important that all this should not be construed, as it was in the last war, as justifying the term "shell-shock" with all its connotations The changes we are discussing should be transitory in the less severe disturbances, but if permanent they should be measurable by abnormal neurological signs or electro-encephalographic studies (Jasper, Kershman and Elvidge 1940) The problem of differential diagnosis between organic disturbances and purely psychogenic disorders remains

SUMMARY

A pheasant found after an air-raid suffering from the blast effect of a high-explosive bomb was in a dazed condition resembling catatonia There were no external injuries but hæmorrhagic lesions were present in the lungs and heart muscle, and in the brain there was capillary congestion throughout the cerebrum with gross hæmorrhages in the forebrain

We suggest that the mechanism responsible for the cerebral lesions was the hydraulic-like pressure on the central nervous system, in its firm encasement, resulting from sudden compression of the thoracic cage with consequent violent back-pressure on the venous side

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PARATYPHOID ABSCESS

RECOVERY OF ORGANISM FROM BONE-MARROW

By A Macdonald, M B Aberd
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SIMPLE abscess caused either by *Bacterium typhosum* or *Bact paratyphosum* B is listed by Browning along with the less common complications such as perichondritis, periostitis and middle-ear involvement It is not often mentioned as a possible source of an outbreak of enteric infection, and this is apt to be forgotten

In the first case a breast abscess caused by *Bact paratyphosum* B developed two months after the patient's discharge from hospital and the infecting organism was found in the sternal bone-marrow at a time when it could not be recovered from any other source The second patient's symptoms were more severe and therefore more likely to be fully investigated, but both histories underline the need for careful examination of abscesses in patients with a recent enteric infection

CASE-RECORDS

CASE 1 —A woman of 38 became ill on July 20, 1940, and was diagnosed as suffering from paratyphoid fever on Aug 3 when she was admitted to the City Hospital, Aberdeen On this date her stools gave an abundant growth of *Bact paratyphosum* B and her serological reactions were typical of that infection, but the organism was not found either in her urine or on blood culture The patient was never acutely ill and by Aug 15 her temperature was normal and her fæces free from the infecting organism Repeated culture both of the urine and fæces between this date and her discharge on Sept 19 was negative

During the first examination of the patient in hospital a small painless lump with indefinite edges was found in the right upper quadrant of the left breast The patient thought it had been present before the onset of her illness, and it was considered to be an area of chronic mastitis During convalescence, on Aug 20, she complained of a dull ache in this breast, which however was not inflamed, and the pain disappeared in a week or two She was advised to have the breast examined at the outpatient department of the Aberdeen Royal Infirmary, and on Sept 20 she reported that the lump no longer troubled her and was getting smaller, so she was told to return for periodic examination On Nov 21 the breast became inflamed and a week later a superficial abscess developed over the site of the original lump The abscess was incised and yielded a small quantity of thin pus which on film was predominantly polymorphonuclear and contained gram negative bacilli On plating out a pure culture of *Bact paratyphosum* B was grown The abscess began to heal rapidly after incision, though the original tumour remained, and two days later and on subsequent examinations only *Staphylococcus albus* was found in the discharge Repeated clinical and two radiographic examinations gave no evidence of involvement of bone or periosteum On Dec 3, after three negative examinations of swabs from the breast wound, sternal puncture was performed By inoculating 0 5 c cm of marrow fluid into 20 c cm of MacConkey broth and meat infusion broth *Bact paratyphosum* B was obtained

CASE 2 —A woman of 43 was admitted to the City Hospital, Aberdeen, on Sept 12, 1940, suffering from paratyphoid fever Her illness was of moderate severity but she persisted in excreting *Bact paratyphosum* B in her fæces for some weeks after admission to hospital She was discharged on Dec 12, when repeated examination of her fæces, urine and bile had apparently shown that she no longer harboured the infecting organism During convalescence sternal puncture was performed but *Bact paratyphosum* B was not obtained A few days after leaving hospital the patient complained of lower abdominal pain and difficulty in micturition and on Dec 30, when she was admitted to Aberdeen Royal Infirmary, the pain had become severe and she was found to have an abscess arising from the pelvis and reaching to the level of the umbilicus The abscess was opened through the pouch of Douglas and a large quantity of pus removed In films the cells were almost all polymorphonuclear and no organisms were seen, but *Bact paratyphosum* B was found on culture On Jan 7 culture of the blood and fæces was negative but *Bact paratyphosum* B was grown from the sternal marrow fluid

COMMENT

Abscesses caused by the organisms of typhoid and paratyphoid fevers are uncommon but important because unlike many other complications they may produce little systemic effect and because they exactly simulate an ordinary pyogenic abscess The first patient was nursed at home after the breast was opened, and had the surgeon not insisted on bacteriological examination the possibilities of spreading her infection would have been great As to the time and manner of the invasion of the breast tissue and as to whether the presence of *Bact paratyphosum* B in the bone-marrow played any part in it there can be only speculation, but the finding of the organism in the sternal marrow after it had disappeared from all other sources is of interest from the carrier point of view In the second patient sternal-marrow culture was negative when the other investigations were also negative, and it may be significant that both positive marrow cultures were found fairly soon after surgical interference These are unfortunately isolated and may be fortuitous findings, but there is experimental evidence that the enteric organisms may persist in the marrow for long periods Browning (1933) quotes the recovery of *Bact typhosum* from the marrow of a rabbit 162 days after intravenous inoculation when the liver, gall-bladder and bile were free, and Coplans (1936) in a series of 104 rabbits recovered the same organism in 90% of instances up to the 27th week Ling and his colleagues

(1940) lately described the value of sternal-marrow culture as compared with blood-culture in typhoid fever , in one patient they found that the bone-marrow still harboured the organism on the 67th day of illness, and in another patient that medulloculture was positive two weeks after convalescence was well established (see *Lancet*, 1940, 2, 169) It has also been said that the bone-marrow forms a depot for the organism in the true relapse which sometimes follows enteric infections Browning's study of the treatment of carriers shows that, though surgical treatment is satisfactory, in about a quarter of the cases cure may not result If the gall-bladder is to be considered a test-tube for the growth of the enteric organisms in the carrier may it not be that, in some instances at least, the reticulo-endothelial cells of the bone-marrow continue to act as the platinum loop ? Further investigation of the bone-marrow in the unexplained carrier may be worth while

I wish to thank Prof John Cruickshank for help , and Dr John Smith, regional bacteriologist, and Mr G Gordon Bruce, surgeon to Aberdeen Royal Infirmary, for access to their records

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A TELLURITE BLOOD-AGAR MEDIUM
FOR THE RAPID DIAGNOSIS OF DIPHTHERIA

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(From the Emergency Public Health Laboratory (Medical Research Council), Cardiff, and the Cardiff and County Public Health Laboratory)

SINCE the discovery by Anderson and others (1931) of the diphtheria types a wide variety of tellurite media have been introduced for diagnosis and type differentiation and some apology may be necessary for the description of yet another such medium However, the multiplicity of the media in common use is in itself an indication that a really satisfactory medium has yet to be found Growth is slow on most of these media none of which consistently fulfils the requirements of the clinician in regard to speed of diagnosis The medium described here is advanced as a solution to this problem

Cooper and his co-workers at Leeds (1940) have recently made a comparative study of most of the media in common use, and have recommended Neill's medium (Neill 1937) as the most satisfactory, since it was easy to prepare and give the highest percentage of positives of all the media tried The relative value of the various media in regard to speed of diagnosis was not referred to in the paper, but I understand that little difference in speed was found Neill's medium was introduced for diphtheria diagnosis in Cardiff but its performance was poor—the type of mitis strain prevalent in the Cardiff area either failed completely to grow on the medium or was much inhibited In addition, some of the intermediate strains gave rather slow growth The type of diphtheria prevalent in Cardiff differs from that in Leeds in that gravis strains are rare An analysis of some 200 positives gave the following incidence of the three types intermediate, 59 2% , mitis, 39 2%, gravis, 1 6%

Attempts were made to overcome the inhibitory effect of Neill's medium on mitis strains, and it was found that if the medium was made up as an unheated, instead of a heated, blood agar the effect disappeared The Leeds workers had found that if McLeod's medium was made up as an unheated blood agar the proportion of mitis positives was increased by 6%, but they rejected the unheated blood medium because the type-differentiation was less pronounced Glass (1939) first described the inhibitory effect of heated blood on mitis strains and recommended the use of unheated blood

As a result of much experiment the following medium has been adopted for routine diphtheria diagnosis in Cardiff It bears little relation to the Neill's medium from which it was derived except that the agar basis is the same

℞ Lab Lemco	10 g
Difco proteose peptone or Bacteriological Peptone (Evans Sons Lescher and Webb)	10 g
Sodium chloride	5 g
Agar	20 g
Water	to 1000 ml

Adjust to pH 7 8 and autoclave The agar is best distributed in 200, 400, or 600 ml flasks Other ingredients of the medium are sterile horse blood (B W and Co) laked by freezing and thawing , and a solution containing 0 7 g of potassium tellurite to 20 ml of water (this should be kept tightly corked in the dark)

To prepare for use take 200 ml of agar melted and cooled to 50° C (the temperature being measured by a thermometer immersed in the agar), add 2 ml of tellurite solution and 10 ml of laked blood and pour plates The medium should have a wine-red colour, and acquire a mahogany colour on incubation Spectroscopic examinations made by Dr John Pryde showed that this change in colour is due to a partial conversion of oxyhæmoglobin into methæmoglobin Some difficulty may be experienced in the successful laking of blood by freezing and thawing The following methods have given best results (1) Freeze the blood hard in a mixture of ice and salt for about an hour in the refrigerator, and then thaw in a water bath at 37° C Do not shake the blood either during freezing or during thawing One freezing is usually enough but it may occasionally be necessary to repeat (2) Distribute the blood in screw capped bottles which should not be more than half full and place them horizontally in the freezing element of the refrigerator and leave overnight Thaw out next morning and repeat daily until completely laked Two freezings are usually enough Laked blood is best stored in the frozen state when it will keep indefinitely (3) If facilities for freezing are not available the blood may be laked by addition of sterile distilled water either to the whole blood, or better to the red cells after centrifuging About 1½ volumes of water is needed to lake whole blood This method is not recommended where facilities for freezing are available as it introduces undesirable dilution of the blood

PROPERTIES OF THE MEDIUM

The medium gives very rapid growth of all types of *Corynebacterium diphtheriæ*, and diagnosis is always possible after 18 hours' incubation Plates should be examined between 18 and 20 hours after inoculation The morphology of *C diphtheriæ* is not seriously modified by the medium, so that in cases of doubt diagnosis can be made by examining gentian-violet stained films from the tellurite, the diphtheria bacilli showing a typical appearance Neisser-stained films are less satisfactory The selectivity is good and the medium will stand heavy inoculation In particular *C hofmannii* grows much less vigorously than on most tellurite media and *C diphtheriæ* will hold its own on the medium against any other organism except *C xerosis* As a result of these properties it is quite feasible when examining large numbers of contacts to inoculate four or six swabs on one plate without any attempt at spreading This method however should not be used until the worker has had some experience of the medium and is familiar with the morphological appearances of *C diphtheriæ* on it Ear swabs should always be carefully spread

Type-differentiation, while inferior to that given by McLeod's medium or by Neill's, is sufficiently good to present no difficulty to anyone with experience of tellurite media The most characteristic feature of *C diphtheriæ* on the medium is the grey colour of the colonies, and plates should be first examined with the naked eye to pick up grey colonies which may then be examined with a hand lens to determine the type Prof H D Wright recommends the use of a binocular dissecting microscope in examining the plates When using this method I find that the best results are given if the plate is placed on an opaque stage, the colonies being illuminated from above by daylight Transmitted light is much less useful The characters of the growths commonly encountered on the medium after 18 hours incubation are —

C diphtheriæ (gravis) —Grey colonies, 1 5–2 5 mm in diameter, with a dull matt surface May be slightly umbonate and show indented margins Colony can be pushed along the surface of the medium with a loop

C diphtheriæ (mitis) —Grey colonies, 1 5–2 mm in diameter, with regular margins and a shining surface Variation in the size of colonies is common

C diphtheriæ (intermedius) —Small grey colonies 0 5–0 75 mm in diameter with shining surface Centre of colony is darker than the periphery, and colonies are very uniform in size

C hofmanni —Usually shows small, rounded, white or greyish white colonies 0 5–0 75 mm in diameter If the medium has been freshly prepared or if the blood is incompletely laked the growth is more profuse, colonies attaining 1 mm in diameter In these cases the colonies are black in the more heavily inoculated areas and white when well isolated

C xerosis —Black, shining colonies of variable size

Streptococci —Minute black or brownish black colonies

Others —Occasionally gram negative cocci, yeasts, and sarcinæ have been encountered and may present some difficulty, the colonies resemble the intermediate type of *C diphtheriæ* but are larger Certain sporing aerobes may grow and give brownish mucoid colonies

VARIATIONS OF THE MEDIUM

Experiments have been made, as follows to determine how far the formula given above can be altered without the medium losing its characters —

The sterile laked horse blood may be replaced by ox or sheep blood, but ox blood laked by Neill's method (addition of formalin and ether) is unsatisfactory Human blood is somewhat inferior to horse blood

The amount of laked blood may be varied from 3 to 5% If more than 5% is used the medium becomes so dark that it is not easy to distinguish the colour of the colonies With less than 3% of blood the medium becomes less selective

The blood must be completely laked If unlaked or partially laked blood is used the growth is more profuse but the selectivity is much less good and the type differentiation is very poor

The concentration of tellurite can be varied within fairly wide limits, but a final concentration of 1 3000 gives best results

The medium appears to owe its characteristic properties mainly to the agar basis This cannot be replaced by ordinary nutrient agar, or by Hartley digest agar Lab Lemco must be used and not ordinary Lemco

It was at first thought that the use of Difco proteose peptone was essential, other peptones tried having given very inferior results, but Professor Wright informed me that Bacteriological Peptone (Evans Sons, Lescher and Webb) gave the same results I was able to confirm this, but if Evans's peptone is used it is important to use a sample of recent manufacture

Experiments were also done using CCY agar as basis (Gladstone and Fildes 1940) Rapid growth of *C diphtheriæ* was obtained but the medium was less selective than mine and the growth of the intermediate type of *C diphtheriæ* was inferior, though the CCY medium gave more profuse and rapid growth of *C diphtheriæ* (mitis)

RESULTS

When the medium was first introduced it was carefully compared with serum and gave the following results —

Total number of swabs examined	1824
Total positive	464
Positive on serum	378 (81 5%)
Positive on tellurite at 18 hours	462 (99 6%)

Two strains did not appear on the tellurite Both grew readily when subcultured from the serum, and the failure in those instances was probably due to faulty inoculation It is to be noted that the serum slopes were inoculated first

The proportion of serum positives to tellurite positives has been higher than that found by the Leeds workers (81 5% compared with 70%) This is probably due to two factors First, in Cardiff duplicate films are made from the serum, one being stained by Neisser and one by Gram, these are examined by independent workers and then cross-checked, and as a result the serum positives are about 10% higher than they would be if only Neisser-stained films were examined Secondly, the types of diphtheria bacilli isolated in Cardiff, being almost entirely intermediate and mitis, are easier to recognise on serum than the gravis type prevalent in Leeds

DISCUSSION

The medium has now been in use for some eight months in three different laboratories A number of different technicians have made it with identical and consistent results, and workers with wide experience of tellurite media and others new to such media have been able to use it with success The main value of the medium is in the rapidity with which diagnosis can be made The rate of growth is almost as good as on serum and the number of positives found at 18 hours is far greater than on serum This fact, coupled with the fact that diagnostic films can be made direct from the tellurite in doubtful cases, raises the question as to whether the use of serum might be discontinued I have not so far had the courage to abandon the serum entirely, but it is clear from these results that if serum were given up only about 1 positive in 200 would be missed, and it is doubtful if the time and labour involved in the use of serum is worth while for such a small increase in accuracy

It is probably unwise to recommend any one medium for general use in diphtheria diagnosis since the problems presented to the bacteriologist vary very much in different areas The observations of the Leeds workers, extending over many years, seem to leave no doubt that where gravis strains are predominant the heated blood media such as McLeod's and Neill's are the media of choice, since they seem to be better for picking out scanty gravis colonies than other media These media, however, do not seem to be satisfactory in areas such as Cardiff where hæmatin-sensitive mitis and slow-growing intermediate strains are common The medium described here will be found most valuable where slow growing strains are common, and especially where the intermediate is the predominant type

SUMMARY

A tellurite blood-agar medium is described with which *diphtheria diagnosis can be made in 18 hours*

Of 464 consecutive positive swabs examined, 462 were positive on the tellurite at 18 hours, and 378 positive on serum

The type differentiation with this medium, while inferior to certain other tellurite media, is sufficiently good to present no serious difficulty to experienced workers

I wish to thank Prof J W McLeod and Prof H D Wright for helpful suggestions, and Dr J Pryde for spectroscopic observations on the medium

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BERI-BERI HEART IN A YOUNG WOMAN

BY JOAH BATES, M B Lond, D C H, D P M
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A WOMAN of 22 was admitted to Addenbrooke's Hospital on June 12, 1940, under the care of Prof J A Ryle She complained of breathlessness on exertion and weakness for the past 6 months, with amenorrhœa There had been no hæmorrhage of any kind She had been up and about until a week before admission, though feeling tired and unfit She was pale and thin, with a considerable brown pigmentation of skin and mucous membranes The scalp was covered with neglected septic lesions There was œdema of the lumbar region and also of the ankles Tendon reflexes were absent at first but returned later She was orthopnœic but not cyanosed The veins in the neck were distended and pulsating The liver was enlarged and tender but the spleen was not palpable The heart was enlarged to left and right, there was definite triple rhythm, an apical systolic murmur, and the blood-pressure was 90/50 Pulse-rate about 110, temperature varied between 97° and 101° Blood-count red cells 1,370,000, Hb 14%, white cells 11,400 (polymorphs 83%) Blood Wassermann reaction negative, blood-urea 32 mg per 100 c cm, blood-potassium 16 5 mg per 100 c cm, serum proteins 5 4 g per 100 c cm (albumin 3 8, globulin 1 5) Vitamin-B_1 excretion test showed considerable deficiency The urine contained albumin and large numbers of pus cells with *Bacillus coli*

The advanced cardiac failure, anæmia, pyrexia and cafe-au-lait pigmentation at first suggested bacterial endocarditis but there was no evidence of embolism or valvular disease The pigmentation of exposed parts and inside the mouth, together with the low blood-pressure, suggested Addison's disease, but this would not have explained the gross anæmia and heart failure, and there was no vomiting The final diagnosis of beri-beri heart was made because the B_1 excretion was only a sixth or less of the normal and was not increased by a test dose of vitamin B_1

The patient was treated with vitamin B_1 (diet and concentrate) and iron in large doses, she was also given a few doses of suprarenal cortical extract The œdema had disappeared in a fortnight and the condition steadily improved until her discharge on Aug 10 Her husband a labourer, had been away for some months on war service and the patient, though not obviously depressed, had been refusing to eat or to meet her friends This may have been a schizophrenic episode, though a doctor was not called in until her condition looked desperate During the development of her illness her diet probably contained an unduly high proportion of carbohydrate This may help to explain both the anæmia and the production of symptoms of thiamin deficiency She had done quite well at school so could hardly be regarded as mentally deficient Her mental state improved considerably while in hospital, though she remained rather apathetic There was a gain of 1½ st in weight and her hæmoglobin was 90% on discharge

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DETERMINATION OF BLOOD-VOLUME IN SHOCKED PATIENTS

By D K Hill, B A *

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In the stress of emergency after the admission of air-raid casualties to hospital there is little time and not much justification for procedures which are not primarily therapeutic For this reason the labile condition of secondary shock receives only such investigation as can be fitted in appropriately with the recognised treatment of the patient Measurement of the circulating blood-volume by existing methods is either considered dangerous or involves a technique too elaborate and lengthy for use on a patient in such a precarious state The method of determining the circulating blood-volume described here combines accuracy and simplicity with benefit to the patient

A known quantity of blood of hæmoglobin concentration different from that of the recipient's blood is infused intravenously The change in hæmoglobin concentration of the recipient's blood is measured, and the blood-volume before infusion can then be calculated as follows —

Equate total hæmoglobin before and after infusion of x c cm of blood

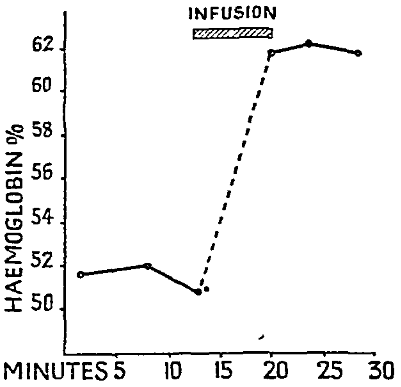
Let BV_x = initial blood volume,
Hb_1 = hæmoglobin concentration of patient's blood before infusion,
Hb_2 = hæmoglobin concentration of infused blood,
Hb_3 = hæmoglobin concentration of patient's blood after infusion

Before Hb in patient $= BV_x \times Hb_1$
Hb in bottle $= x \times Hb$
After Hb in patient $= (BV_x + x) \times Hb_3$

$$(BV_x \times Hb_1) + (x \times Hb_2) = (B_xV_x + x) \times Hb_3$$

$$BV_x = \frac{x(Hb_2 - Hb_3)}{(Hb_1 + Hb_3)}$$

Blood with a hæmoglobin concentration considerably higher than that of the patient was obtained from stored blood by removing the plasma The infusion should be rapid and for this reason air-pressure drive is required Drip transfusion is too slow with a fluid so rich in corpuscles Hæmoglobinometry has been accurately done by a photoelectric method using 20 c mm of blood obtained from a deep stab in the lobe of the ear It is essential to have a free flow of blood so that squeezing can be avoided Samples are taken at short intervals before and after infusion and sampling and observational errors are thereby made insignificant



Case 1 —Hæmoglobin concentration before and after infusion of 400 c cm blood

RESULTS

Case 1 —Boy aged 16 Liver ruptured by lorry wheel Hæmorrhagic shock after operation Blood pressure 60 mm Hg Pulse rate 140 The hæmoglobin concentrations over the period of infusion, expressed as percentages on the Haldane scale, are shown in the figure

Hb concentration of 400 c cm added blood = 95 7%
Hb concentration of patient's blood before infusion = 51 3%
Hb concentration of patient's blood after infusion = 61 8%
Calculated blood volume = 1 29 litres

Case 2 —Woman aged 55 Air raid casualty, shocked after severe injury to limbs Blood pressure 40 mm Hg Pulse imperceptible Subsequently died

Hb concentration of 330 c cm added blood = 109%
Hb concentration of patient's blood before infusion = 68 5%
Hb concentration of patient's blood after infusion = 78 8%
Calculated blood volume = 975 c cm

Case 3 —Man aged 35 Blood pressure 110 mm Hg Pulse rate 100 Hæmatemesis 2 days previously

Hb concentration of 540 c cm added blood = 118 7%
Hb concentration of patient's blood before infusion = 32 7%
Hb concentration of patient's blood after infusion = 46 2%
Calculated blood volume = 2 9 litres

Case 4 —Man aged 52 Hæmatemesis a week previously Blood pressure 118 mm Hg Pulse rate 88

Hb concentration of 500 c cm added blood = 81%
Hb concentration of patient's blood before infusion = 21 6%
Hb concentration of patient's blood after infusion = 27 0%
Calculated blood volume = 5 0 litres

Case 5 —Man aged 50 Slow hæmorrhage over long period from gastric ulcer Blood pressure 124 mm Hg Pulse rate 80

Hb concentration of 420 c cm added blood = 100 3%
Hb concentration of patient's blood before infusion = 22 7%
Hb concentration of patient's blood after infusion = 30 1%
Calculated blood volume = 4 6 litres

The blood-volume is inversely proportional to the change in the patient's hæmoglobin concentration but since the change is small the error in measurement of blood-volume is almost the same as the error in measurement of the change of hæmoglobin concentration In case 1 the accuracy (as judged from the scatter of points in the figure and neglecting other less important sources of error) is of the order ± 200 c cm

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* In receipt of a grant from the Medical Research Council

DISCUSSION

This method for determining circulating blood-volume has the same rationale as the commonly employed dye method but is more reliable since the added "dye" (hæmoglobin in corpuscles) cannot escape from the circulation. The method can be used with benefit to the patient in circumstances when determination of blood-volume by other means would not be justifiable, provided the hæmoglobin concentration of the added blood differs sufficiently from the initial hæmoglobin value in the patient. The method was used in two severely collapsed patients and the circulating blood-volume was found to be exceedingly low.

Bushby, Kekwick and Whitby[1] have suggested a method of finding blood-volume by observing the dilution of hæmoglobin consequent on infusion of plasma. We have used such a method in a number of cases with hæmorrhagic or traumatic shock. Considerable inaccuracies, especially in shocked patients, due to loss from the circulation of the infused fluid, may limit the value of results so obtained, unless, as Whitby and his colleagues insist, the observations are carried out immediately before and immediately after the rapid transfusion of a known volume of plasma. Hæmoglobinometry done frequently shows that about 40% of the dilution acquired after rapid infusion may be lost within 30 min. This is probably due to the fact that plasma- or serum saline, being diluted with saline anticoagulant, has a protein content only 60–70% normal. An approximate correction for loss of fluid during infusion may be made by the construction of a curve of hæmoglobin values and extrapolation. The method might be improved by the use of serum from coagulated blood not diluted with saline.

SUMMARY

Blood-volume can be determined while treatment is being given to a shocked patient by observing the change in hæmoglobin concentration after infusion of a known quantity of blood from which the plasma has been removed.

We thank Mr. A. C. Pincock for technical assistance and the chief medical officer of the L.C.C. for permission to use observations made on patients in Hammersmith Hospital.

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Medical Societies

ROYAL SOCIETY OF MEDICINE

At a meeting of the section of Medicine on Jan. 28, with Sir MAURICE CASSIDY, the president, in the chair, a discussion on the therapeutic value of

Transfusions of Derivatives of Blood

was opened by Colonel LIONEL WHITBY. He said that transfusion should always be performed with a definite object—restoration of oxygen-carrying capacity, for which red cells are essential, as in the anæmias; or restoration of blood volume, for which any innocuous fluid which is well retained in the circulation is suitable. On rare occasions transfusion is used to contribute leucocytes, platelets, clotting elements, complement or antibodies. Blood derivatives are as a rule very efficient for restoring blood volume, but with the exception of stored blood are useless for increasing oxygen-carrying capacity. Including stored blood, they are useless for contributing leucocytes and serological constituents. The available derivatives are stored blood of different ages, citrated plasma, blood-serum, dried blood-serum and concentrated suspensions of red cells in physiological glucose-saline or plasma. Stored blood a few days old, cleanly and properly taken, is almost as good as fresh blood for restoring oxygen-carrying capacity. Its corpuscles are sufficiently durable to allow decantation from and re-suspension in saline or glucose-saline in high concentration. With time, the corpuscles deteriorate and may become fragile and hæmolysed. Such corpuscles do not endure long in the circulation and produce a reaction. They contribute only temporarily to the oxygen-carrying power, and are unsuitable in the anæmias. French physicians, however, have used ageing blood somewhat daringly as a means of introducing iron into the circulation, and even aged blood is useful in the emergencies of battle. Carefully-taken and refrigerated blood, to which glucose has been added, does not lose its volume-restoring properties for four weeks. When it is under a week old its oxygen-carrying power is almost equivalent to that of fresh blood. The younger the blood the greater its durability. The disadvantage of stored blood is the complexity of the apparatus required for its proper preservation. The corpuscles of young stored blood and fresh blood can be used for the preparation of concentrated red-cell suspensions for the treatment of anæmia, where the object is to produce the maximum oxygen-carrying power. Such suspensions allow an increase of hæmoglobin of approximately 20% per pint, instead of the 10% of the ordinary transfusion. In six cases the results have been excellent. The procedure is particularly advantageous in cases of true plastic anæmia leading a transfusion life, and greatly reduces the time needed for the transfusion.

Experimental work on cats (which Colonel Whitby illustrated by slides) has shown the relative properties of the various derivatives and substitutes. The effect of saline is evanescent. Respiratory embarrassment is associated with transfusion of substitute fluid but is most marked with serum. The best replacement substance, and the one adopted by the Army, is plasma saline. For maintaining as well as restoring blood pressure a protein-containing substance is necessary. A 25% hæmoglobin-Ringer solution is quite efficient for restoring and maintaining blood volume, but has the grave disadvantage that hæmoglobin is a foreign pigment and has to be excreted. Gum-saline is reasonably efficient for maintaining blood-pressure, but it is difficult to make two suspensions alike. Glucose is as evanescent in its effect as saline. The order of preference is whole blood, plasma, serum, hæmoglobin-Ringer, gum saline, isotonic saline and isotonic glucose. The only true index of the efficiency of plasma is its protein content, because the crystalloids are rapidly excreted. The plasma produced by the Army transfusion service has a protein content of 4–5%. In the treatment of over 100 air-raid casualties, 165 pints of plasma were used, and only 3 patients had mild and transient rigors. The plasma was anything up to 56 days old, and was stored in a cool room in the dark. The maximum amount given to any one case was six pints. In large transfusions it is an advantage for at least one pint in three to be blood. Army citrated plasma contains no Merthiolate preservative. Its utility for blood loss is unequivocal. Its use must be controlled by serial blood pressure examinations. For any proper assessment of the relative value of plasma and serum, cases that have suffered comparable blood loss and comparable reduction in blood-pressure must be systematically studied throughout the transfusions, or no-one can say whether the restoration of blood-volume had been adequate, inadequate or excessive. The rise of blood-pressure that can be expected from each pint transfused is between 10 and 20 mm. Hg. The commonest cause of failure of the blood-pressure to rise quantitatively with transfusion is continued bleeding. The need for transfusion rarely ends in the resuscitation ward; the patient should be sent to the theatre with a cannula tied in a bottle of slowly-dripping blood which can be instantly accelerated if the occasion arises.

Dr. JANET VAUGHAN analysed the work of the North West London Blood-supply Depot. Concentrated red cells, she said, are useful when it is necessary to raise the protein content without affecting the blood-volume. In assessing relative therapeutic value, relative toxicity and dosage must be considered as well as therapeutic effect; after these considerations came ease of preparation, transit and storage. Unfiltered, filtered and dried plasma and filtered, dried and citrated serum are available, but only the first two groups of plasma and serum respectively have been used in the depot. Unfiltered plasma is obtained by siphoning from sedimented red cells, preferably after five days, and not later than two weeks Its protein content is 4–5% It very rarely forms clots Filtered plasma is clear but very apt to clot Merthiolate 1% has been added habitually to plasma to prevent infection , but disinfectant is not added to the sera, as the risk is much less Filtered serum contains about 7% of protein No serious reactions have followed the use of any of the preparations Unfiltered plasma has been given to 18 air-raid and 7 civilian casualties, with two reactions of mild fever and rigor Filtered plasma has been given to three times as many cases again with only two reactions With filtered serum 19 bottles have provoked two reactions in one case the serum was given cold, which was inadvisable With dried serum 47 infusions have produced 13 reactions most of them very trifling and following highly concentrated injections , at normal concentrations the incidence of reactions falls considerably Plasma serum and blood in all the forms seem equally effective, as far as it is possible to assess them under blitz conditions, and there is no great difference in the dosage Fresh blood should be given if severe sepsis is present The only sure guide at present to therapeutic value is the rise of blood-pressure , the pulse is very unreliable Since some anæmia has been found in most air-raid casualties both blood and a protein fluid seem indicated With unfiltered plasma there have been 23 good results and 6 deaths · with filtered plasma the figures are 84 and 12 Blood has been given to 30 patients successfully and to 7 who have died An initial dose of 400 c cm of normal serum is satisfactory in most shocked patients Concentrated doses do to some extent withdraw fluid from the tissues into the blood-stream and improve blood-volume, but better results are obtained with normal serum Hæmoglobin values of 60–70% are often found in air-raid casualties Probably it is best to transfuse with one or two bottles of plasma and then with one or two bottles of blood , 37 patients treated in this way have done extremely well As far as possible, therapy should be controlled by blood-pressure and hæmoglobin reading Burns should be treated by transfusion immediately Transfusion is too often delayed for 24 hours or until after " cleaning up ' it should start before arrival in the theatre and continue all through surgical intervention and into the ward—for 24–48 hours If protein fluid continues to drain from the patient transfusion must go on still longer fresh blood being used for choice Plasma or serum are better than blood during the first 24 hours after burns, when hæmoconcentration occurs Concentrated serum will reduce local œdema but has proved disappointing in nephrotic œdema Dried serum has the advantages that it does not clot, is not readily infected is unaffected by temperature, is small in bulk Plasma seems to be an ideal culture medium the infection-rate is 7% even under the most rigorous conditions There is at present no proof that its fibrinogen is important Concentrated red cells have become almost embarrassingly popular ; they are valuable for aplastic anæmia, anæmia associated with sepsis and anæmia in elderly patients requiring immediate operation Red cells should not be used younger than five days or older than a fortnight They last well in the circulation except in a small group of splenomegalic anæmias Two bottles will raise the hæmoglobin level from 20 to 60%

Dr **Helen Brown** said they have been unable to confirm the work of Aldrich on nephrosis , there was increased albuminuria after injection, so presumably the protein was excreted In one case the blood protein rose for 24 hours only, and the œdema became worse

Prof T B **Davie** wondered whether cases of anæmia with sepsis should have concentrated red cells or fresh whole blood His practice has been to give whole blood to raise the hæmoglobin to 90% as soon as possible and thereafter to maintain this level by repeated injections of fresh whole blood from donors In drawing blood for blood banks plasma is made available automatically but bleeding for serum would produce difficulties

Mr **George Qvist** related the cases of two firemen with second-degree burns of the hands and face with severe blistering There was no real shock and blood-pressures were about 130 The burns were cleaned up and treated with continuous saline Next morning, one was doing well and the other showed a severe fall of blood-pressure and a hæmoglobin of 132, with severe œdema of hands and face He was given repeated infusions of concentrated serum—about 620 c cm. of four-times concentrated—and each time the blood-pressure stayed up for about half an hour In 24 hours however the anxiety was at an end The case illustrated Dr. Vaughan s statement that all burns should be treated with transfusion straightaway

Dr **Montague Maizels** agreed that serum may be theoretically better, but plasma from blood banks has much to recommend it and infection is not a serious factor A separate outfit should be used for each bottle to avoid transferring infection which can then be cut down to 5, or even 2% Merthiolate is an absolute snare it obscures the issue Unfiltered plasma being cloudy, makes detection of infection more difficult, but filtered plasma is a beautifully clear fluid and as long as it is translucent it is pretty surely not infected

Dr P L **Mollison** said that there is a distinct disadvantage in having a suspension containing more than 7½ million red cells in concentrated preparations since they then become too viscous to flow

Colonel **Whitby** in reply, said that treatment of secondary shock is an entirely individual matter. He agreed that merthiolate is a snare —Dr **Vaughan** also briefly replied

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Reviews of Books

Industrial Hygiene

By A J **Lanza**, M.D , assistant medical director, Metropolitan Life Insurance Co , New York , and **Jacob A Goldberg**, Ph.D , secretary, Industrial Hygiene Committee, New York Tuberculosis and Health Association. London Humphrey Milford, Oxford University Press Pp 743 42s

The interest taken in industrial medicine and hygiene had been growing steadily during peace-time, but a sudden fillip has been given to it by the war More medical men are being appointed to look after the health of factory workers and they are meeting problems which differ in many respects from those of ordinary medical practice A real need has arisen for an up-to-date and authoritative textbook on the subject and since a complete survey appears to be beyond the scope of one individual the ideal textbook on industrial medicine should be the work of a team of experts The many facets of the work are well shown in this new book on industrial hygiene from the United States It deals almost entirely with American industrial conditions which differ in many respects from ours It will have a limited value for British readers but should not be neglected on that account Its 21 chapters include a good one by Selby on the scope and organisation of health services in industry, and Woodruff deals adequately with the physical examinations of employees Weeks contributes a useful section on the care of the eyes in industry and Bowman writes about the mental hygiene of factory workers Other chapters cover traumatic surgery (Moorhead and Slattery), physical therapy (Bierman) ; rehabilitation of the injured worker (Kessler) ; silicosis and asbestosis (Lanza), skin diseases (Schwartz) industrial poisoning by the heavy metals (Reznikoff) and by gases and fumes (von Oettingen and Sayers) , lighting and atmospheric control (McConnell) ; and the place of the nurse in industry (Rosamund Goldberg) J Burns Amberson's chapter on tuberculosis and other pulmonary diseases is a concise account which would take a place of honour in a textbook of medicine Wright s chapter on peripheral vascular disease is made valuable by its relevant case-histories and Foster Kennedy's article on the nervous conditions resulting from injury sparkles with erudition humour and wisdom The editors are to be congratulated on having cast such a wide net but some of the catch might have been thrown back into the sea Lanza's own chapter on silicosis and asbestosis is one of the shortest in the book and might well be expanded in the next edition , whereas those sections written by contributors who have had little contact with industry could be shortened to make a more balanced book

Outlines of Industrial Medical Practice

By HOWARD E COLLIER, M D Edin , formerly reader in industrial hygiene and medicine, University of Birmingham London Edward Arnold and Co Pp 440 21s

Dr Collier has made a valiant attempt to cover the field of industrial medicine , in five main sections he deals with the executive and advisory functions of the works doctor, industrial psychology, industrial medicine, and industrial forensic medicine He insists, quite properly, that the book is only an outline , but it would have been better to omit all reference to the safety provisions of the Factories Act 1937 unless he had been prepared to deal with them fully , over-compression has given an erroneous idea of the requirements of Part II It is just as important for the works doctor to know about such matters as air receivers, steam boilers cranes and hoists as that he should be told that a fixed vessel containing boiling or corrosive liquid should be covered or have a guarding rail three feet high And in the description of the duties of the examining surgeon the Home Office instructions quoted are those of 1933, the important changes made by the 1937 act being ignored The chapter on accidents and safety is inadequate even in an outline and two of its six pages are given up to accidents in sewers, rather a far cry from factory experience The section on the keeping of health records will be of more use to the works medical officer than the lavish space devoted to the psychology of the individual and the group Some of the rather numerous inaccuracies may be due to careless proof-reading, as for example the statement that good results in the treatment of carbon-monoxide poisoning are obtained from the use of 93% CO_2 and 7% O_2, but not the failure to mention the Mark IV dust respirator while recommending less efficient types And the lapses are the more to be regretted as the work is logically planned and well set out

Health and Efficiency of Munition Workers

By H M VERNON, D M Oxfd, formerly investigator for the Health of Munition Workers Committee and for the Industrial Health Research Board London Humphrey Milford, Oxford University Press Pp 138 *8s 6d*

Dr Vernon's pioneer investigations have often been referred to in these columns He has shown that many munition workers suffered from sickness and loss of efficiency owing to unfavourable conditions and long hours of work It is not likely that the errors committed during the last war will be repeated in so gross a form during the present one, but some of the lessons learned will probably be forgotten or ignored Dr Vernon has therefore thought it worth while to recapitulate briefly in book form the evidence collected by the committee and the remedies which were then suggested Although the book contains no new work and nothing which cannot be found in Dr Vernon's articles and larger books, or in the publications of the Industrial Health Research Board it is to be recommended to works doctors and factory managers on account of its handy size and its concise and accurate presentation of the subject matter

Synopsis of the Principles of Surgery

By JACOB K BERMAN, M D , F A C S , assistant professor of surgery, Indiana University school of medicine, Indianapolis London Henry Kimpton Pp 615 *25s*

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(2nd ed) By HUGH MORRIS, M D Belf , D M R E London J and A Churchill Pp 394 18s

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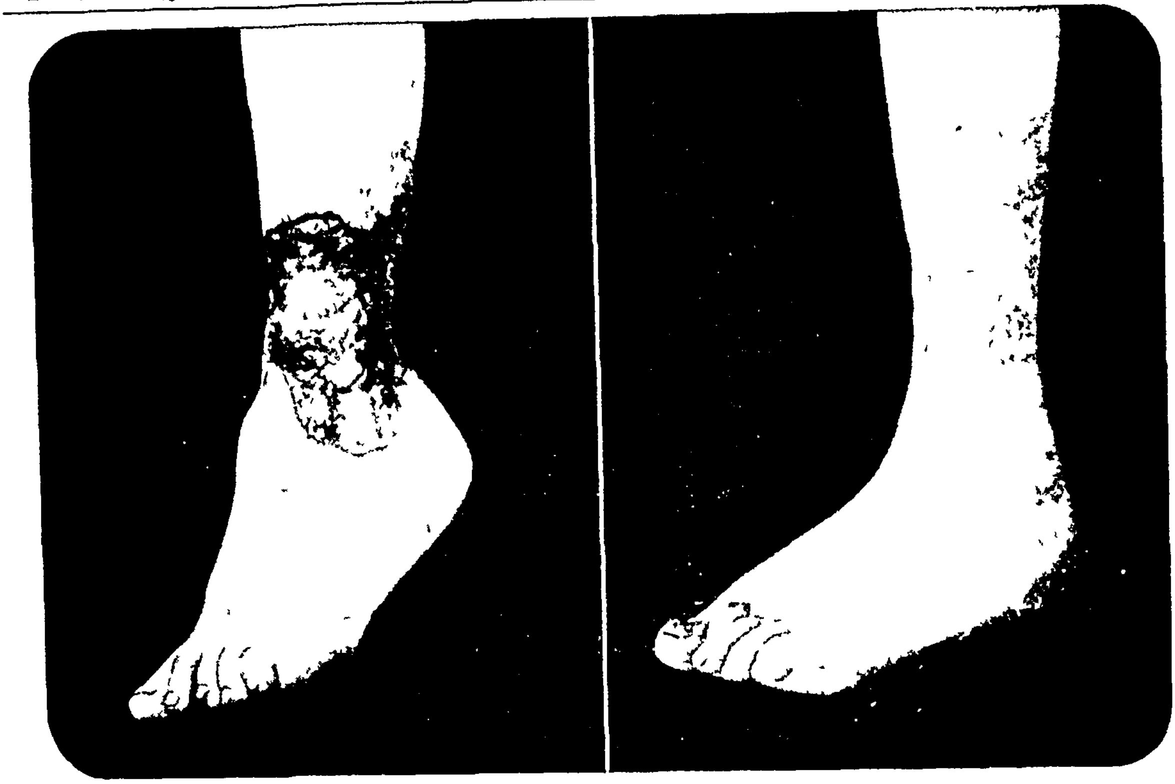

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THE LANCET

LONDON: SATURDAY, FEBRUARY 8, 1941

OVERTIME AND OVERTIRING

WHEN a north-country firm was summoned last month for working boys longer than the law allows the magistrate dismissed the case on the ground that such prosecutions were likely to impair the war effort. The Minister of Supply had given the firm carte-blanche to do as they liked. We have all taken this question of war effort so much to heart that we have forgotten the first principle of conserving energy. It is not the man who digs his garden most violently on the first day of spring who gets his digging done first. Mr. J. H. MIDDLETON has told us before now the story of his too eager uncle whose indulgence in digging led to blistered palms and a sharp attack of lumbago, and this beautiful analogy fits like a glove the case of overtime in industry. It seems incredible that we should be learning again, by experience not precept, the lesson which the last war made so painfully lucid. In 1916 we were told[1] that munition workers had "been allowed to reach a state of reduced efficiency and lowered health that might have been avoided without reduction of output by attention to the details of daily and weekly rest." In 1941 the same criticism holds good in many factories. Employers have not been able to realise, even yet, that working to capacity does not mean working each man, woman and young person for as many hours as he or she can stand at a machine.

The hours worked by women and young people under 18 are controlled by law, and factory inspectors have power to regulate them. The factory department of the Ministry of Labour has set its face against young people between 14 and 16 working more than 48 hours a week at the outside, even where their services make for the smooth running of a team; and this standard was laid down within five months of the outbreak of war.[2] Yet this standard is being overridden in some places, as the court case mentioned above shows. Women too are still being overworked in some industries. The subcommittee on supply services, whose report was presented to Parliament during January by the Select Committee on National Expenditure, found that in Glasgow women were being asked to work in munition factories seven days a week; and that they left home at 6 in the morning and did not get back till 11 at night. Many had to give up industry because it was impossible to run their homes or make domestic purchases. Thus their services, instead of being used economically for the advantage of the country, were lost completely. But on the whole firms have conformed to the department's standard for women and young people. It is upon grown men that the heaviest burden of overtime is falling and the Government has no legal control over the hours they work. That they are suffering under the strain is evident from their own accounts—one of our peripatetic correspondents recorded his conversation with an overtired man last week (p. 157)—and from the subcommittee's finding that the lessons of the last war "seem largely to have been ignored." This despite the Ministry of Labour's circular of July which recommended an immediate reduction to an average of 55 or 56 a week as soon as the necessary labour force had been acquired. After Dunkirk many factories were working 24 hours a day seven days a week. Within two months the effects of strain appeared in the workers, shown by increased sickness and absenteeism. Fatigue was proving, as usual, a cardinal factor in reducing resistance to infection.

Unfortunately the question of overtime is intricately bound up with the interests of the fighting services, the trade-unions, the employers and the workers themselves. The hours worked by men over 18 are regulated mainly by agreement between employers and trade-unions, and most munition workers belong to unions. Both employers and unions prefer that the regulation of hours should be in their hands, the unions because they naturally like their members to be able to earn more by working overtime. The fact that overtime is paid at the rate of time-and-a-half on week-days and double pay on Sundays has made some difficulties. The subcommittee mentioned above found that Sunday labour leads men to take a day off in the middle of the week, when they only lose an ordinary day's pay and earn double pay on Sunday to make up for it. It is difficult to blame them for this; they are human, living is costly, and they realise that they must take a day off each week if their health and output are not to suffer. Wise employers realise that there is a direct relation between long hours and absenteeism. One managing director put it like this: "You want output. I'll give it to you. But please don't try to tell me how it is to be done. I know that if I overwork my men the output will fall." His firm made tanks. In many cases managers have deliberately reduced hours to increase output. The subcommittee found that in the Royal Ordnance factories absenteeism during the summer drive rose from 10 to 15%; in July it was decided to discontinue Sunday labour wherever possible, and often Saturday afternoon labour as well. Time-keeping improved at once and production did not suffer; indeed one factory, after the reduction of hours, set up a new record for a week's production.

On mere economic grounds we cannot afford this extravagance of overtime; it is enough to recall the proof in the last war that abnormal overtime increases cost out of all proportion to the increase in production and the subcommittee are of the opinion that it is having the same effect now. They point out that the Ministry has used its compulsory powers to a very minor extent. They endorse an immediate reduction of hours to the level recommended by the Ministry and they think no undue delicacy should be allowed to interfere with this necessary change. Mr. ARTHUR WOODBURN, who is a member of the subcommittee, said in Parliament last week that efficiency in war and industry depended on Parliament's policy being carried out on personal responsibility. Committees cannot carry things out but persons can. It is up to the firms to see to it that the Ministry's advice is followed. The three-shift system advocated by the subcommittee would safeguard the health of the workers and ensure maximal output.

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[1] Committee on the Health of Munition Workers. Memorandum VII. 1916.

[2] Report on hours of employment of women and young persons in factories during the first five months of war. Cmd. 6812. H.M. Stationery Office. 3*d*. See *Lancet*, 1940, 1, 505.

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Iron has been known for centuries to be valuable in the treatment of anæmias, and modern scientific research entirely confirms this fact. Its association with manganese has also been proved to enhance its value

Each fluid ounce represents —

Vitamin A	*16,500 International units*
Vitamin D	*5,500 International units*
Vitamin B_1	*75 International units*
with Vitamin B_2	
Iron and Ammon Citrate	*4 grs*
Manganese Citrate, Soluble	*$\frac{1}{4}$ gr*

In a palatable base containing Malt Extract

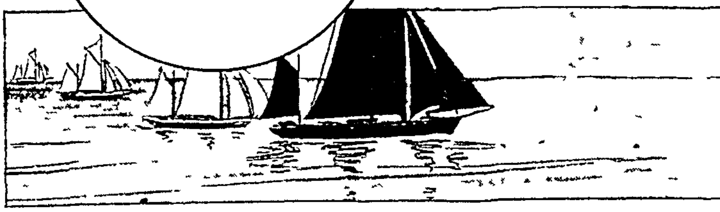
IRRADEX provides the fat-soluble vitamins A and D in a most pleasantly tasting form, far superior to cod-liver oil, the growth-stimulating vitamin B in sufficient quantity, the anti-anaemic effects of iron and manganese, and the nutritive and diastasic value of malt.

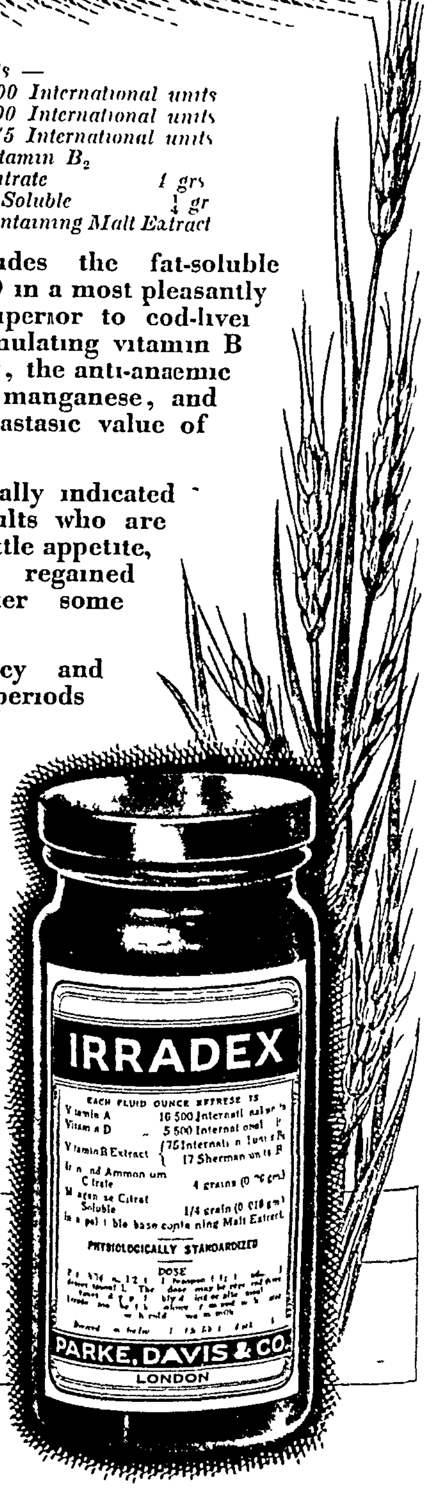
Irradex is specially indicated for children or adults who are underweight, have little appetite, or who have not regained healthy vitality after some acute infection

During pregnancy and lactation, or other periods of stress, Irradex is especially indicated. It may well be prescribed for its nutritive effect in convalescence from operations

DOSAGE From 1 teaspoonful to 1 dessertspoonful three times a day

Supplied in containers of approximately 1 lb, $2\frac{1}{2}$ lbs and 7 lbs

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EACH FLUID OUNCE REPRESENTS
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In a palatable base containing Malt Extract
PHYSIOLOGICALLY STANDARDIZED
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Laboratories Hounslow Middlesex *Inc U S A, Liability Ltd* compounds Usually a tumour forms with considerable regularity at the site of application—a sarcoma if injected, an epithelial tumour if painted on the skin Tumours due even to dimethylaminoazobenzene, however administered have a site of predilection—the liver—in which epithelial tumours appear regularly Other organs are less often affected Kleinenberg and his colleagues have thus succeeded in raising the total incidence of spontaneous tumours in mice by means of liver extract, of producing a great diversity of growths and of raising the incidence of lung adenomata which were already plentiful in the strain The greatest rise followed extracts of livers from cancer bearing patients, but the response of tumour formation was not limited to these It may be argued that all the patients who died without signs of cancer were nevertheless potentially cancerous For this reason children's livers would have provided a better control It is also perhaps worthy of note that the livers from which the extract was derived did not themselves bear tumours during the life of the patient, though, by way of the blood-stream, these livers must have been subject to repeated applications of the hypothetical endogenous carcinogen which later on was extracted from them There are difficulties in accepting it as proved that the livers from cancer-bearing subjects contain in life naturally occurring substances capable of inducing cancer The character of the stock played too great a part in the enormous rise, and the extract lacked specificity It is as though the claim that dibenzanthracene is a carcinogenic agent had been founded on the raised incidence of lung adenomata which it brings about rather than on its local action at the point of application

Some preliminary experiments recorded by de Ligneris[4] show again some lack of specificity in response to extract derived from cancerous livers Papillomas and a few carcinomas followed skin painting with extracts from both cancerous and non cancerous Bantu livers Two papillomas, one of which was malignant, developed after application of the non-cancerous extract, five papillomas, one of which was malignant, followed the cancerous extract No extracts of European livers, however, gave rise to any tumours As in the former experiments, children's livers would have provided a better control, but these may not have been obtainable So far the data point to a cancer factor in livers whether from non-cancerous or cancerous subjects or to the development of one during handling in the laboratory Human liver extracts examined by Hieger[5] gave similar non specific results This work appears to have reached a stage where obscurities might be cleared up if performed wholly on animals The proportion of tumours likely to follow injection of liver extract from normal or non cancerous mice should offer no difficulty except the quantitative one Any increase in tumours attributable to the cancerous nature of their owners could also be found by pooling all livers over a period of time from cancer-bearing stock mice The influence of either extract on the incidence of spontaneous lung adenomas could be controlled better by using a strain in which this tumour was known to be low.

CONGESTIVE HEART FAILURE

According to Dr Samuel A Levine[6] the improvements in the last twenty years in the treatment of heart failure have come not so much from any notable new discoveries as from a more intelligent and effective use of old remedies This is true up to a point, but there have been advances which have changed our lines of treatment, for this period has seen not only the increasingly rational use of digitalis and the recognition of the limitations of oxygen therapy and venesection but also the introduction of the organic mercurial diuretics Moreover, as Levine says, we have come to realise the vitally important differentiation of peripheral from central circulatory failure and that to ply the unfortunate victim of lobar pneumonia complicated by peripheral circulatory failure with digitalis and diuretics is not only useless but often definitely harmful The significance of thyrotoxicosis in the ætiology of heart-failure, particularly with auricular fibrillation, has also been more generally recognised and Hay among others has pointed out that in patients with thyrotoxic heart failure the thyroid enlargement may not be detectable clinically, though this is no reason for recommending subtotal thyroidectomy in all cases of heart failure of doubtful origin Kinsey and White,[7] too, have clarified the ætiology by their finding that fever, however slight, in congestive heart-failure is evidence of some complicating condition, the commonest being pulmonary infarction, pulmonary infection (especially bronchopneumonia), active rheumatic infection, and coronary thrombosis

In the management of congestive heart failure we still rely on the triad of rest, digitalis and diuretics Of the value of complete rest there can be no doubt, though Levine reminds us that in some patients, particularly elderly ones or those with primary left ventricular failure, rest in bed may aggravate rather than alleviate the condition For this well recognised state of affairs in which the heart is embarrassed by the increased return of blood to its right side, the cardiac bed, the top third of which can be raised and the bottom third lowered, is preferable to the old-fashioned combination of a comfortable chair and a table on which to lean Digitalis is still our stand-by in all forms of congestive heart failure, whether with auricular fibrillation or normal rhythm,[8] and the main advances have been in the reliability of the various preparations of digitalis on the market, and in the recognition of the need for adequate dosage, though the massive dosage popularised in America by Eggleston[9] has not been widely accepted here Expensive proprietary preparations are no longer required in the ordinary case, and Evans[10] has demonstrated that the powdered leaf is the best and also the cheapest form of digitalis for maintaining equable digitalisation The work of Fraenkel and his colleagues[11] on the value of strophanthin has, for some reason, not received due attention in this country, despite Lewis's[12] teaching, there is something to be said for the intravenous administration of strophanthin in doses of gr 1/100 in the few cases where immediate control of the ventricular rate is required Quinidine sulphate by the intravenous route has also proved its value in cases of paroxysmal ventricular tachycardia when all other measures[9] have been tried and the heart is failing, and acetyl-β-methylcholine has established itself in the treatment of paroxysmal supraventricular tachycardia[13]

The question of which diuretic to use in congestive failure has now been definitely settled, the organic mercurial diuretics have proved superior to all others Indeed, in adequate dosage—2 c cm intravenously every third or fourth day—they have almost done away with the need for mechanical removal of œdema fluid, certainly Southey's tubes may be relegated to the museum, and there are few cases of hydrothorax which will not respond to these drugs In ambulant patients who have shown clinical evidence of cardiac œdema and received the appropriate treatment, they often prevent, or at least postpone, a recurrence Bleeding is now rarely needed

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[4] de Ligneris, M J A. *Ibid*, p 489 [5] Hieger I *Ibid* p 496
[6] *J Amer med Ass* 1940, 115, 1715

[7] Kinsey, D and White P D *Arch intern Med* 1940, 65, 163
[8] Gavey C J and Parkinson, J *Brit Heart J* 1939, 1, 27
[9] Eggleston C *Arch intern Med* 1915, 16, 1, *J Amer med Ass* 1920 74 733
[10] Evans, W *Brit Heart J* 1939 2, 51
[11] Fraenkel, A *Lancet*, 1935, 2 1101
[12] Lewis T Diseases of the Heart London, 1937, p 89
[13] Ebert R. V and Stead, E A Jun *J clin Invest* 1940, 19, 561

LITTLE's [2] request in Parliament for a Royal Commission, to which the Prime Minister replied in terms which indicated only too clearly the probable burying-place of the B M A commission's findings Meanwhile what can we outsiders do to help ? Just now there are many gatherings of doctors, young and old but especially young, which might find it a better exercise to devise their own plans for medicine or any of its branches than to find fault with the B M A 's, and we would gladly grant them space for such reasoned forecasts as the one printed on p 187 of this issue

Annotations

ERYTHEMA NUCHÆ

MANY of us have been asked by the mother of a new-born baby to explain the significance of a red staining of the skin in the occipital region or on the eyelids The inevitable maternal fear that the condition is a "birth-mark" is either expressed in the question or at any rate is the cause of the questioning The old hand will be able to give reassurances because he has often seen the condition, has observed that it certainly becomes no worse as the infant grows older, sometimes even disappearing from the facial region and being conveniently hidden in the occipital areas The inexperienced, on the other hand, may be doubtful about what looks at first sight like a large port-wine stain and for this reason some observations by F Ray Bettley [3] are worth noting Bettley uses the term erythema nuchæ but admits that the lesions bear some resemblance to a nævus and are probably only different in degree from a mild type of port wine stain He examined over 150 infants in the maternity department of Cardiff Royal Infirmary and found this variety of erythema in three quarters of them, the sexes being equally affected The commonest situation was the occiput (84%) where it was usually symmetrical and measured 1–2 in across, but the occiput was only involved alone in about 40%, other situations in order of frequency being eyelids, forehead posterior fontanelle, lip, retro auricular region, parietal region and vertex Various combinations were common and the lids only, for example, were involved in 8 cases The incidence of definite hæmangioma was much less, 7 cases including one with a minute spot, occurring in the group of infants examined Searching for a possible cause of the erythema Bettley tested the theory of pressure by studying the obstetric records in some detail Beyond showing a slightly increased incidence among the children of primiparæ, however, and some correlation between the type of presentation and the side of the eyelid involvement, where this was unilateral, the evidence was not convincing and the pressure theory is left unproven As regards prognosis Bettley examined an unselected series of 60 adults attending the skin department of the Cardiff Royal Infirmary, and found that half of the men and more than half of the women had some degree of erythema in the occipital region The eyelids and forehead were normal in every case In most instances the erythema was slight and its existence was unknown to the patients or their parents, but in 4 cases it was more definite It may be concluded from these observations that erythema nuchæ requires no treatment, that when affecting the facial regions it disappears spontaneously and in the occipital region usually tends to diminish in intensity Its ætiology is unknown, but the alarm it may cause in the new-born baby's relatives can justifiably be dissipated

VITAMIN C ON THE MARKET STALL

As the result of Miss Olliver's [1] work on the decrement of vitamin C in fruits and vegetables in the 24 hours after they are gathered it has been rashly assumed that the green vegetables exposed for sale in the East End of London three or four days after picking are almost completely devoid of vitamins This Miss Gweneth Chappell [2] has now shown to be entirely false, in a study of the vitamin C content of greengroceries on sale at cheap and more expensive markets It is true that in the majority of the 58 foods she investigated there is somewhat more vitamin C in those from an expensive market than in those from stalls, but in many cases—e g , the cabbage, tomato and radish—there is significantly less It was easy enough in 1939–40 to obtain a day's ration of 30 mg of ascorbic acid in a cheap market by the expenditure of a farthing (brussels sprouts, black currants, curly kale, lemons, oranges, spring greens, savoys, turnips and watercress) to three farthings (ripe banana, grape fruit, onion, parsley) "It appears," concludes Miss Chappell, "that avitaminosis occurring amongst those of limited means is due to an improper dietary, caused by poverty and ignorance, rather than to an insufficiency of ascorbic acid in the foods purchased on the open market" She confirms that fruits and vegetables bought in the open market have less ascorbic acid than freshly cut garden produce, and that the decrement is greatest in sprouts, potatoes and peas, while black currants, gooseberries and raspberries do not show so great a loss, and she calls attention to the importance to the health of the nation of encouraging allotment schemes Now that our main foreign sources of ascorbic acid have largely disappeared from the markets, this is even more important

THE SEARCH FOR CHEMICAL CARCINOGENS

EVER since cancer producing chemicals were made in a laboratory by Kennaway and Cook, efforts have been renewed to find these or similar substances under natural conditions within the body Kleinenberg, Neufach and Shabad [3] now claim that they have done so In a series of well controlled experiments on large numbers of mice they found a variety of tumours following the subcutaneous injection of extracts of human livers The livers were obtained from patients who had died with malignant disease elsewhere in the body In the control experiments they were derived from those who had died of other causes Details are given of the method of extraction, of injection and of the general and local reactions in the mice The number and nature of the tumours which occurred in stock mice at the same time was also recorded In the group injected with liver extract from cancer bearing subjects the incidence of tumours was 57 4% in mice which survived for eight months, of which 45 3% were lung adenomata , of those injected with liver extract from non cancerous subjects 24% bore tumours, of which 26% were lung adenomata , and among the stock mice surviving for eight months there were 10 3% bearing tumours, of which 8 48% were lung adenomata The rise in incidence of tumours in both the experimental series is impressive An equally striking feature is their great diversity Only six were seen at the injection site, and these were varied All the others were found at a distance in skin, mammæ, liver, thymus and maxillæ, and their histological characters were also different In respect of the diversity of type and origin of tumours the response to liver extract was thus unlike that which is known to follow injection of the synthetic chemical carcinogens with the exception of some azo

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[2] See *Lancet*, Feb 1, 1941, p 163

[3] *Brit J Derm* 1940, 52, 363

[1] *J Soc chem Indust* 1936 55, 156

[2] *J Hyg Camb* 1940, 40, 699

[3] Kleinenberg H E , Neufach, S A Shabad, L M *Amer J Cancer* 1940, 39, 463

Special Articles

FUTURE OF CLINICAL PATHOLOGY

ITS PLACE IN A SOCIALISED MEDICAL SERVICE

By D Stark Murray, M B , B Sc Glasg
PATHOLOGIST TO THE ROYAL HOSPITAL, RICHMOND

CLINICAL pathology advanced with great rapidity as a result of the last world war and there are indications that it may receive another impetus from the present one No branch of pathology is static and those concerned with detection of disease and departures from normal are still in the stage of development which may lead to greater diagnostic accuracy The rapidity of that development will depend to some extent on the attitude of the profession as a whole not only to clinical pathology but to the prevention of disease

RELATION OF CLINICAL PATHOLOGY TO MEDICINE

The attitude of the medical profession to clinical pathology and the clinical pathologist cannot be said to have reached finality There are still those who regard the clinical laboratory as a place from which, under orders, results confirming the physician's diagnosis may be forthcoming There are, however, others who would agree with Goodhart[1] that "pathology is and must remain the rock on which the house of medicine is built" Goodhart realises that successful medicine is only possible when there is "coöperation between ward and laboratory, but the cooperation must be a real one between equal partners" Such a partnership will only be possible when the relation of clinical pathology to other fields of medicine has been defined and accepted At the moment the clinical pathologist may be described as one who is skilled in the technological procedures valuable in the diagnosis of disease or the control of treatment, and practised in the interpretation of these procedures He may perform tests which provide answers nearing that mathematical accuracy which earns name of science , and his interpretation of ascer-ned facts may need to be as delicate as that which the ysician brings to bear on the sounds he hears with his thoscope In this interpretation the clinical patholo-t must leave the laboratory and relate his findings the patient , and in so far as he realises that individual actions must be taken into consideration so will his operation with the physician or surgeon benefit the tient He will work to the best advantage, of course, those cases where he is given a free hand and can carry t his tests in the order and at the time most likely, in experience, to yield results

Goodhart fears that we "are breeding a race of patholo-sts who regard contact with human beings as a con-minating influence" Medical science needs every pe of worker, but the greatest need will always be for ose whom Zinsser[2] describes as "coordinators prepared bring the laboratory to the wards and the wards to the boratory" We shall make a serious mistake if we ink of clinical pathology as a service provided only in rge hospitals Dyke[3] appears to do so and is thereby d, in my opinion, into the error of expressing himself though clinical pathology meant hospital pathology ith a little "private practice" If clinical pathology essential to those working in fully equipped hospitals, ow much more necessary is it to general practitioners ho must deal with disease on their own initiative? uch has been written about improving the status and andard of general practitioners and it is undoubtedly ue that their association with the hospital service, as ggested in a recent pamphlet,[4] would produce the nprovement One factor in that process would be the pportunity to use that most valuable of tools, clinical athology That tool should, however, be available to every practitioner in his ordinary practice It would be of great value to the doctor, to the sick who desire rapid diagnosis, and to the community, which wants early detection of disease The clinical pathologist, too, has much to gain by association with the work of the disease-prevention agencies and with the general practitioner Pathologists who are only enraptured by the rare or intricate cases often complain that they are asked to do too many tests that produce only normal results Yet it is only by a sufficiently large background of these averages which we call normal that the finer reactions to disease may be gauged Such a background would be provided by work in the homes of the people and in clinics and surgeries, and the benefit to the community that would arise from new methods of detecting minor changes would be equalled by the advance in clinical pathology that this work would ensure

The association of the laboratory with the civil population would have further implications The clinical pathologist cannot work with the general practitioner and the disease-prevention services without being required to take part in epidemiological bacteriology There is, of course, much work to be done by experts in this subject and large-scale investigations are for the specialist , but the clinical pathologist is concerned with everything which affects the patients of the doctors with whom he works He must therefore be viewed as one part of the team which serves a community and not as a man who confines himself to a particular set of problems If he is well trained he will know when he requires the help of experts in one branch or another Closer relation with the bacteriologist engaged in whole-time study of infectious disease will benefit all laboratory workers The primary detection of diseases such as diphtheria and typhoid is rarely the work of the bacteriologist Diphtheria comes under the care of the general practitioner, typhoid is often admitted to a general hospital In both cases the pathologist has to make or confirm the diagnosis, and his laboratory must be conveniently situated. Where many laboratory examinations are needed it is obviously preferable that they should be carried out by one staff and interpreted by one expert The community served by a laboratory must therefore be of a size to require a laboratory large enough to carry out routine procedures at an economic cost, and small enough for the staff to be familiar with all the work passing through it This question of laboratory size introduces a different conception from that of Dyke although one would agree with him that all hospitals over a certain size must have a trained pathologist

In these circumstances the clinical pathologist becomes one of the most valuable liaison officers between the different parts of the medical services This is no theoretical suggestion but one which has worked out, in a variety of ways according to local conditions, in various parts of the country I have experience of an area in which it has worked for many years Now, under the Emergency Pathological Service (E P.S), the laboratory concerned does the clinical pathology for one large hospital, three cottage hospitals, and an isolation hospital, for the five boroughs which these hospitals serve, a large barracks and for over a hundred practitioners in these districts It follows that no case of meningococcal meningitis or typhoid, for example, occurs in the district without the laboratory staff knowing about it and being able to follow it up at every stage from the first visit by the G P to its removal to hospital and on to convalescence The laboratory is constantly consulted by practitioners, medical officers and hospital staffs about individual cases and about outbreaks of infections, and is often in a position to give information more rapidly than it could be obtained by any other method For the laboratory staff itself it is invaluable to be able to follow up every type of case, to discuss treatment—and in modern serological and chemotherapeutic methods the clinical pathologist plays an important rôle—and to correlate findings about different patients as they move from one medical sphere to another Patients do not always remain under the care of one doctor, but though, in the area under discussion, patients may change their personal or even hospital doctor they do not change their pathologist; and this has valuable and occasionally amusing results

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1 Goodhart G W *Lancet*, 1940, 2, 737
2 Zinsser, H As I Remember Him, London, 1940
3 Dyke, S C *Lancet*, 1940, 1, 86
4 Medicine Tomorrow, Socialist Medical Association, 1940

except in a few cases of left ventricular failure, and Ebert and Stead's[13] observation that as much blood is removed from the general circulation by a venous tourniquet on the limbs as by the usual phlebotomy should tend to diminish still further the need for this traditional line of therapy. The introduction of the B.L.B. mask, whereby oxygen at concentrations up to 100% can be given for long periods, has called for a *revision of opinion on oxygen therapy in heart-failure, particularly in view of the successful results obtained in* coronary thrombosis. Finally, the problem of the best diet for patients with congestive failure has been at least partially solved by insisting on as little restriction as possible. The Karell diet has received a new lease of life. In view of the hypo-proteinæmia present in certain cases of congestive heart failure the patient's diet should contain as large a proportion of protein as his digestive tract can cope with; whether the Karell diet of 800 c.cm. of milk daily meets these requirements is doubtful. There is now general agreement that salts and fluids should be restricted, though not to the pitch of causing discomfort to the patient.

RESPIRATION IN THE NEWBORN

Bauer,[1] of Detroit, has made a useful mechanical study of some of the questions about respiration in the newborn which remain unsolved. He felt that it was desirable to have a more definite picture of the relative functions of the diaphragm and chest wall in normal respiration, particularly because such understanding will help in the safe employment of any mechanical means to initiate or improve respiration in the newborn baby. The apparatus Bauer used consisted of two cloth-enclosed rubber tubes ("cigarette drains") similar to the cuff of a sphygmomanometer, one encircling the abdomen just above the umbilicus and the other the chest at the nipple line. Each was attached to a recording tambour by small rubber tubing. A third pen recorded time in seconds. After the tubes had been applied, the baby was placed in his crib, covered and allowed to go to sleep. The tubes were then gently inflated—the degree of pressure did not appear to affect the results—and the recording started. Nineteen healthy infants were studied, ranging from 1 to 10 days in age and 6 to 9 lb. in weight. Most of the tracings lasted over a period of 5–10 minutes and fortunately in most instances the babies remained asleep, some soundly, some lightly. The rates of breathing were higher and much more varied than has hitherto been described. The slowest average rate was 28 per min. in a completely quiet infant and the highest 120 in an infant who was crying, but a maximum rate of this degree was also found in a quiet infant and in another with hiccups. The average for all the observations was about 60 per min. It was found that the amplitude of the abdominal movement was from two to five times as great as that of the chest. At least two types of related movement were found in all the babies. In one the chest expanded slightly with expansion of the abdomen and in the other there was a retraction of the chest just before full expansion of the abdomen. Bauer explains these observations on the basis that when breathing is rapid and shallow the chest expands with the abdomen—i.e., with diaphragmatic descent—but when breathing is slower and deeper the more forceful pull of the diaphragm produces retraction of the relatively weak, elastic chest wall. These observations throw some light on the ætiology of atelectasis, at any rate in a negative way. Weakness of the chest wall has been considered a possible factor in non-expansion of the lungs, but Bauer found such weakness in some degree in all these healthy babies, suggesting that cohesion of moist alveolar walls and bronchial obstruction are more likely factors. Another point which he makes is that there should be no mechanical interference with respiratory movement, unless it has never started or has stopped completely, because it is unlikely that any apparatus for artificial respiration could be regulated to follow the great variations in rate and type which are present in the newborn. He suggests that some means of holding the chest in a position of full expansion for short intervals might help by eliminating the retraction caused by the pull of the diaphragm in laboured breathing. Bauer's records show that crying causes the greatest degree of expansion of the chest and abdomen, and, intelligently used so as not to cause trauma or make things worse for a severely asphyxiated baby, the production of a "lusty cry" still remains justifiably popular as a means of starting off or deepening early respiratory effort.

IMMUNISATION AGAINST SCARLET FEVER BY MOUTH

VARIOUS reasons can be given why immunisation against scarlet fever is not at present a practicable—or even necessary—procedure. The repeated injections of toxin with a fair proportion of both local and constitutional reactions, the mildness of scarlet fever, and the fact that immunisation against the erythrogenic toxin does not protect the individual to any degree against the streptococcus itself have together prevented a wide usage of this prophylactic measure. Yet, immunisation against scarlet fever may from an administrative viewpoint be desirable in certain circumstances—e.g., among nurses in fever hospitals, children in residential schools, and in institutions where an epidemic of the disease has lately occurred. To overcome the difficulties associated with the ordinary method of shallow hypodermic injection of the toxin in graduated doses over a period of five to six weeks, the Dicks[1] have been exploring the possibilities of immunisation by the mouth. Obviously the liquid toxin could not easily be distributed in large quantities for oral administration, so they prepared a purified toxin in powder form, which, given either in saccharose or in syrup, caused a considerable amount of nausea and vomiting, as might be expected in view of the known affinity of scarlatinal toxin for the gastric mucosa. Enteric-coated tablets were therefore prepared and used with success, although some failures resulted either from the coating being dissolved in the stomach, causing gastric upset, or from its being undissolved because of rapid passage through the gut. The optimum dosage is 75 million skin-test doses given once daily after a meal for three weeks in gradually increasing amounts from 100,000 S.T.D. to 6–10 million S.T.D. on each of the last few days. Of 102 people who received amounts of toxin ranging from 47 to 91 million S.T.D. over a period of two to three weeks, 94.7% were immune on retest. In 4 of these cases, transient scarlatinal rashes appeared, usually after the 4 million dose; 2 people vomited once. The advantages of the oral route seem to be in the shorter period of immunisation and the avoidance of local reactions; it will be particularly valuable for people who are allergic to foreign protein.

SIR JOHN MCFADYEAN, formerly principal of the Royal Veterinary College, died on Feb. 1 at Hindhead in his 88th year.

Prof. A. H. BURGESS will deliver the Hunterian Oration before the Royal College of Surgeons of England on Feb. 13 at 2.30 P.M. His subject will be Charles White of Manchester and he will speak at 1, Wimpole Street, W.1.

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[1] Bauer, A. R. *Amer. J. Dis. Child.* 1940, 60, 1342.

[1] Dick, G. F. and Dick, G. H. *J. Amer. med. Ass.* 1940, 115, 2155.

age in the city, of whom about 13,000 would be artificially protected In 1939 there were 104 notifications of diphtheria, of which 22 were in children who had been inoculated In 4 of these the diagnosis was not confirmed and in 4 others inoculation had been performed elsewhere than by the public-health department Of the total of 13 258 children known to have been protected 128 have been notified for diphtheria since 1927, the diagnosis being confirmed in 67 and rejected in 61 The incidence of diphtheria amongst protected children under thirteen was therefore 1 in 200, which is less than a tenth of the expected incidence This confirms the claim made for immunisation that it reduces the incidence by nine-tenths and abolishes fatality All available information, which is now immense, justifies this claim

NEWPORT, MON

Dr H W Catto s report for Newport is fully comprehensive As in other parts of Britain, the health of this county borough in 1939 was a record for goodness, but there was one unsatisfactory feature in the maternal mortality-rate of 6 7 per 1000 births live and still In the two preceding years the rates had been 1 27 and 3 18 and in former years the rates had not been high Two of the ten maternal deaths were due to sepsis, an average number for the town, but both followed miscarriage We are not told the duration of the pregnancies —whether the products were abortions or stillbirths— but the occurrence demonstrates the confusion in estimating the maternal mortalities of English districts The Puerperal Pyrexia Order, now incorporated in the Public Health Act of 1936, leaves it uncertain whether pyrexias following abortion are, or are not, notifiable and consequently whether deaths accruing from it should, or should not, be reckoned in casting the puerperal mortality The word used in the law is not abortion but miscarriage, which is not defined and in practice is used loosely, by some as synonymous with abortion, by others with premature delivery, by others to cover both

In 1832 Newport covered 938 acres and had a population of 7062, in 1936 its area had grown by encroachment to 7873 acres and its population, mainly by natural increase, to 97,500 Between 1904 and 1939 its birth-rate fell from 32 48 to 15 46 and its death-rate from 15 63 to 12 87, the present tendency being for the former to fall still further and the latter to rise slightly The infantile mortality varied very little from 1877 (167 2) to 1904 (153 9) but was halved by 1934 and in 1939 scored the low level of 53 6 This reduction to a third of what it was 30 years ago goes but a very slight way to counteract the fall in the birth-rate, and the fall in the general death-rate, which is comparatively slight and, now being reversed, has not done much more to maintain the population level, for though it is still growing in numbers it is ageing rapidly The stillbirth-rate in Newport was high, 46 3 per 1000 total births, or 0 76 per 1000 population, against the average of 0 59 for the 126 great towns Dr Catto says that the results of the compulsory registration of stillbirths reveal that the records for the years before registration are fairly reliable In Newport the stillbirth-rate, after falling for several years, is again rising It is curious how this rate varies from year to year and from place to place The rate should fall steadily with the improvement of midwifery, but it has not done so with the regularity we expected In 1900 the percentage of total deaths occurring in persons under 5 years was 45 2 and in those over 65 years 15 6 In 1939 the former had shrunk to 8 16 and the latter risen to 51 3 This record, though not exceptional, is a remarkable testimony to the advances made in the present century

GILLINGHAM, KENT

In the borough of Gillingham, of which Dr W A Muir is M O H, the infant mortality in 1939 was 32 and the stillbirth-rate 29 There were 34 illegitimate pregnancies running to viability of which three ended in stillbirth and 31 in livebirths with no infantile mortality These numbers are too small to have much significance, but the record is interesting in showing the combination of a low infantile mortality with a low stillbirth-rate in legitimate and a low infantile mortality with a high stillbirth-rate in illegitimates These two combinations were frequent in 1939 Neonatal death is in the main of similar causation as prenatal death and therefore the rise and fall of the one should vary inversely with the other, but death during delivery is preventable by skilled midwifery, so improvement in midwifery does to some extent reduce the total of the two divisions Good midwifery may ensure the live birth of an infant incapable of survival—such as an anencephalic—which is of no value from the infant's point of view, but is of considerable value to the mother, for it means a less severe or prolonged labour The decrease in the postnatal mortality of illegitimates is a recent gain of great value but the prenatal mortality of illegitimates is still comparatively high The explanation is that owing to the compulsory notification of births the born infant can be brought under supervision, whereas pregnancy not being notifiable unmarried mothers usually escape supervision Out of a total of 32 infant deaths, 22 were due to congenital debility, prematurity and malformations

In the twelve years 1928–39 the attack-rate of diphtheria varied from 0 13 in 1932 to 1 1 in 1938, the average being 1 26 In the ten preceding years it was 1 24 Though the annual incidence of diphtheria fluctuates widely, the average has remained unaltered for a great many years, not only in Gillingham but in most districts of Britain In America the incidence has been falling since Osler's time, and since the introduction of inoculation it has sunk extremely rapidly We can expect a similar result from inoculation in Britain

LEAMINGTON SPA

Dr E R Gilmore, of the borough of Royal Leamington Spa, records a zymotic death-rate of nil, an infantile mortality of 31 3, a tuberculosis mortality of 0 54 per 1000 population and the average age of death as 65 years Of 411 births, 16 were illegitimate, 4 of these died, giving an infantile mortality of 250 Amongst the legitimate infants the mortality was 21 6, astonishingly low for a town of 30,000 inhabitants, the stillbirth-rate was 19 5 per 1000 total births, which is also remarkably low People certainly live long in Leamington, for of 412 who passed away in 1939 only 152 failed to reach 65 and the same number scored 75 or more The birth-rate in 1939 was 13 4, the highest since 1930 The average birth-rate for the past thirty years was 11 8 and the average death-rate for the same period 14 8 also The average infantile-mortality rate for the period was 60 2 It did not fall much before 1932, but in 1934 it was only 8 9, which surely must be a record However, the average of the three years 1933–35 was 33 4, so the record was "accidental"

Infectious Disease in England and Wales

WEEK ENDED JAN 11

Notifications —The following cases of infectious disease were notified during the week smallpox 0, scarlet fever, 1164, whooping-cough 2761, diphtheria, 1233, enteric fever, 30, measles (excluding rubella), 15,413, pneumonia (primary or influenzal), 1465, puerperal pyrexia, 119, cerebrospinal fever, 266, poliomyelitis, 5, polio-encephalitis, 1, encephalitis lethargica, 2, dysentery, 93, ophthalmia neonatorum, 73 No case of cholera, plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Jan 17 was 2321 including scarlet fever 325 diphtheria, 343 measles 902, whooping cough 140 enteritis 23 chicken pox, 216 erysipelas, 50, mumps 25 poliomyelitis 2 dysentery 53 cerebrospinal fever 46, puerperal sepsis 6 enteric fevers 7 german measles, 4 other diseases (non infectious) 91 not yet diagnosed 88

Deaths —In 126 great towns there was no death from smallpox or enteric fever, 1 (0) from scarlet fever, 22 (2) from whooping-cough, 23 (1) from measles, 43 (3) from diphtheria, 36 (4) from diarrhœa and enteritis under 2 years, and 69 (9) from influenza The figures in parentheses are those for London itself

There were 6 deaths from diphtheria in Liverpool Birmingham reported 7 fatal cases of whooping cough Greater London had 1 fatal case of enteric fever

The number of stillbirths notified during the week was 217 (corresponding to a rate of 38 per thousand total births), including 13 in London

ECONOMIC FACTORS

It has long been recognised that expansion of laboratories is made much easier when they have some method of "boosting" their incomes Laboratories are not an expensive item in a hospital budget, and even at such low rates as that now charged in the E P S may show a profit on paper, yet hospital committees still appear to expect laboratories to find some way of paying their cost So long as a fee system remains, the best method is that of associating the laboratory with public-health authorities and general practitioners Under such conditions the pathologist should be employed on a basis which recognises that he must be free to move from hospital to hospital and to visit patients in their homes This touches the wider problem of organisation of the medical services as a whole, for a laboratory service cannot be perfectly organised if the rest of medicine remains on its present anachronistic basis It is true that the present E P S attempts to fit itself to existing conditions, but both in the circular which at present controls it and in the remarks of the ex-Minister of Health to a deputation of the Socialist Medical Association, it is conceded that such a service can only be provided as a fully socialised service—that is to say, it is available to every member of the community, whether in hospital or at home, and the provision of the necessary assistance to doctors and patients comes before the question of fees The scheme also accepts, by its relation to the sector arrangements, the principles of regional organisation and of inclusion of all laboratories in the area

THE UNIT PLAN

The supreme importance of clinical pathology can only be demonstrated and put into operation as a service when the form of the medical service of the future has been decided That it must be a fully socialised service will be universally accepted when the profession and the public recognise what such a service would provide In a fully socialised medical service four cardinal principles would be recognised completeness, universality, unification and regionalism These principles would give medicine its first opportunity to reach full scientific stature, enabling the profession to concentrate on health-preservation and disease-prevention, rather than on treatment and palliation, they would provide a service sufficiently flexible to meet all demands on it, even those of major epidemics, and at the same time would give to doctors conditions of work that have even yet not been clearly visualised

Regionalism must not be confused with that other conception, regionalisation, now the basis of the E M S, of the work of the Nuffield Trust and probably of future local government Regionalisation simply recognises that a more efficient and economical arrangement of services is possible when the country is divided into regions, mostly larger than the traditional boundaries of local authorities It is inevitable that the control of medical services will follow similar boundaries to those laid down for other services, so that while the Ministry of Health may lay down the national policy for medicine there will be an opportunity for adjustments to local conditions This will not safeguard true democratic control (true in the sense that each individual will have a chance to influence those services which affect his well-being) nor will it provide a medical service in which the patient can feel confidence unless at the same time regionalism is adopted Regionalism cannot be fully explained without a consideration of the probable basis of a socialised medical service, but it depends on the same conception as that put forward above for a pathology service—the conception of a unit of population of a size convenient for doctors and patients alike In the Walton plan[5] a unit of 100,000 has been taken for purposes of illustration, but a close examination of population distribution, transport facilities and social habits is needed before the best size of unit can be decided in each locality Flexibility is essential, and the opinion of local doctors and patients would help in establishing a series of regional units sufficiently large to be efficient and small enough to satisfy all those demands for personal attention and knowledge which some fear a socialised service might not meet

In each region there should be a full domiciliary, hospital and specialist service, and all the ancillary services a doctor needs must be available both in the homes of the sick and in clinics provided for the maintenance of health There are a number of services—research, educational and highly specialised—which would serve more than one regional unit but be just as *easily accessible to every patient and doctor* There is *of course no double standard of treatment in those* diseases for which a specific remedy has been found, and there is no valid reason why a double standard of attention or treatment should continue in any part of medicine There should be only doctors and patients and both should have every help that science and organisation can give If the profession is to be welded into one service with interchangeable personnel, with rapid dissemination of new methods and ideas, and with a basic standard below which no part may be allowed to fall, it is essential that there should be unification The service postulates which would be universal, unified under one authority and so closely related to the needs of the individual through regionalised control that there would never be any danger of it becoming stereotyped *or bureaucratic It would react to the demands of those* mainly concerned, the doctors and the sick The problem, as Zinsser says, "is to find a solution which shall meet the requirements of effective scientific care of all those who require it, and at the same time that sense of personal responsibility, compassion, and judgment without which the physician becomes a mere technician" This problem can be solved for clinical pathology by the type of service described

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[5] *Medicine Today and Tomorrow* March, 1939

Public Health

From the Annual Reports

HAMPSTEAD

From Dr H Leslie Oldershaw's report of the metropolitan borough of Hampstead we learn that in 1939 in a population of 90,000 there were no deaths from measles and only one from whooping-cough, and in 980 births only one maternal death There were 39 deaths from pulmonary tuberculosis, 38 from pneumonia and 39 from violence other than suicide For some years these three causes of death have been competing for first place in the death table after cancer and the senile group of diseases Violence is winning Though in theory fatal violence is the most preventable of all means of death, in practice it is not preventable, for with the exception of suicide, homicide and execution, all violent deaths are accidental, that is, due to failure of prevention through human error They do, however, admit of some limitation by medical means, for accident proneness is an entity sometimes due to physical or psychological states which can be diagnosed

LEYTON

In his report for Leyton Dr Andrew W Forrest gives an account of the establishments for massage and special treatment In April, 1934, Leyton corporation took over the powers and duties of the Essex County Council Act of 1933 in regard to licensing these establishments and made by-laws for the conduct of the business These by-laws are concerned with the respectable management of the establishments, but, as Dr Forrest emphasises, do not prescribe the technical qualifications of the persons administering treatment, and he recommends that in future licences be granted only to persons possessing technical qualifications recognised and approved by the Board of Registration of Medical Auxiliaries We presume the Essex County Council Act conveys power to make the appropriate by-laws

PLYMOUTH

Immunisation against diphtheria has been practised in Plymouth since 1927 In the last five years the numbers of children who completed the course of injections were 2118, 1766, 1535, 1137, and 1183 The number of births in the city last year were 3446 There would be about 42,000 children under thirteen years of orners are sometimes no longer available for there was much damage below ground and water is leaking into he station at many points but repair work goes on night nd day, and there was hardly any interruption of the unning of the trains

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A friend of mine is in charge of a large camp for prisoners He tells me that one of the most remarkable hings about the feeding of the men is the small amount of swill the Germans make—they waste about a third of what our men do and they render down every bit of fat available Mr J B Priestley has told us to look forward to communal restaurants as social centres and we may imagine other advantages in them too Another friend of mine a well-known caterer tells me that the by-products alone will make them worth while Breadrumbs, potato peelings and cheese rind are all valuable by-products but meat he says, yields more useful things than any other article of food, and they can be extracted rom it to best advantage in a communal kitchen If 5000 people are allowed 4 oz of beef per head and carry it home to cook a joint of 1 lb will serve four people and a joint of 6 lb twenty-four, but housewives will agree, he tells me that from the 1 lb joint nothing will be left, and from the 6 lb joint there might be enough bones to make soup for five of the family and enough dripping for four of them to have bread and dripping for tea And what would happen to the bones of the carcass? Did 10% of them—for they are valuable—find their way to the contractor? And did the butcher boil the large bones before he sent them to the contractor? He should have done for the contractor finds them just as useful to him cooked as raw, and the remains of meat upon them would have made rich stock Suppose the same amount of meat—1250 lb—had been issued to 5000 communal eeders There would be roughly, I was astonished to earn three forequarters and four hindquarters of meat in this allowance After giving everyone roast beef for their midday meal from the bones of the seven quarter carcasses, it will be possible to give 3000 people a really good soup in the evening From the skimmings from the top of the stock-pots when the bones are boiling to make this soup, it will be easy to extract enough fat to give everyone half a slice of fried bread the following morning Fat taken from the carcasses before the joints were cut up and put in the roasting ovens will yield enough dripping to give everyone enough for a good spread on bread for tea And 95% of the bones will have gone to the contractor The dripping made from the fat cut from a carcass before it has been boiled or roasted is called in the Army first-class fat and that from the skimmings of bones being boiled for soup, second-class fat My catering friend does not approve of these descriptions because the fat or dripping called second-class is far more palatable than that called first-class The balance in favour of communal feeding as far as meat goes—and, as I now realise, it goes a long, long way—is tremendous and he assures me that other foods are saved in the same proportions Yes communal feeding should be here for the duration

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If at times I get discouraged I go and talk either to workmen or antique dealers It sounds an odd combination but the reasons for my choice will appear later A few weeks ago I was asking a lad of seventeen about the hours and conditions of his work He forges parts of aeroplane engines for 12 hours at a stretch and works by day one week and by night the next "Do you feel very tired after your 12-hour shift?" I asked "Yes, just a bit," he replied "Only a bit? Do you really feel that you could go on after 12 hours of it?" "Of course, sir after all we've got to win the war haven't we?" I could not resist patting his sturdy shoulder with a "that's the stuff to give 'em" And all the lads I spoke to had the same spirit Not being a Southron I feel all the more entitled to praise these gallant English boys There is nothing decadent about them, nor are they dull clods or blind mouths, as Milton has it They are highly intelligent and are made of the same stuff as the Elizabethan adventurers In some ways I imagine that they are even better than the Elizabethans, because there was probably more romance in sailing the Spanish main than in working in a steel factory—though the factory has a grimly romantic atmosphere all its own

I daresay that others besides myself have noticed that antique dealers as a class are charming people They are probably drawn to antiques because they are sensitive to the beauty of line and mass and colour of the things made by craftsmen, and most of them are passionately in love with their wares Sensitiveness to beauty does not necessarily go with charm of manner and friendliness, but the fact remains that in antique dealers it usually does A grocer would not as a rule welcome anybody into his shop to discuss the æsthetic qualities of his rows of tinned conserves, and it would be a brave customer who would do so and then leave the shop without a sample of one of the 57 varieties But I often go into an antique dealer s shop and see and discuss things worth looking at and leave without buying one True I have not always gone into these honey pots and escaped without things sticking to me, and I do not regret the adhesion of such things as an oil painting by Etty, a water-colour by C J Fox, a dainty imperial yellow porcelain bowl of the K'ang Hsi period or some old English wine glasses Some things the dealers will not let go They like them too much One of my antique dealer friends has a beautiful old mirror in his sitting-room and nothing will induce him to part with it Several times have I sat in one of his Chippendale chairs and admired it silently and vocally But the other day when I was making a nuisance of myself again about it he said, "I don't think you have any specimens of Chelsea china in your collection Here is a lovely little piece which I've kept for you You'll notice the smoothness and peculiar excellence of the glaze and how delicately the exotic bird has been painted" When I asked about the price he indicated rather shyly that it was a gift His delicate gesture delighted me and I felt as if I had a collection of Chelsea china as magnificent and complete as that of Dr Bellamy Gardner Incidentally I forgot all about the mirror and the exigencies of the war

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The effect of disease supervening on existing disease must have been noted and aroused curiosity from time immemorial It is a subject historically best suited to the patient, thorough, critical compiler, such as one finds among Germans It can hardly have escaped the attention of some historically minded investigator, but if there is some work on it I have not seen it There is also the problem of the mode of action of one disease on another which could only have been investigated in recent times, involving as it does immunological and chemical research It is as worthy of a thesis as a good many subjects and would require more historical research than individual experience on the part of a candidate The experience, I think, lies locked up, with much else of interest, mainly in the memories of general practitioners Herpes on the lips and elsewhere in pneumonia is said, according to Fagge's "Medicine" (1888), to occur in from two-fifths to one-half of all cases, and he remarks that it is very strange that it is far more common in cases that do well than in those that end fatally He adds that this has long been a traditional opinion, and that it seems to have been established by the observations of Geissler (1861), who found that of 421 cases the mortality amongst those with no herpes was 29 3%, compared with 9 3% in those who had it Naegeli (*Munch med Wschr* 1936 83, 339) also speaks of the belief of experienced practitioners about the favourable influence of herpes simplex on other diseases, especially pneumonia, and confirms Fagge's quotation concerning the mortality-rate Why this influence? A further curious statement that I have seen is that the success of fever therapy in neuro-lues is most frequent and most pronounced in herpetics, especially in patients in whom a considerable eruption appears during the cure In some cases neuro-lues was favourably influenced by herpes-inoculation and subsequent activation with fever when a previous fever-cure had been ineffective This statement should be verified especially when diathermy or short-wave therapy is used

A very uncommon instance of the action of malady upon malady is reported from Sofia (cited in *Munch med Wschr* for Oct 21, 1938) A patient who had had diabetes for nine years developed severe diarrhœa, and was found to have atrophic cirrhosis of the liver Clinical recovery from the diabetes, or at least marked

In England Now

A Running Commentary by Peripatetic Correspondents

YESTERDAY I went to the Abbey for the memorial service to B-P, not an uncheerful occasion No-one in our time has given as much happiness and health as this, lovable boy-man, for not only has he inspired all those vast numbers who have been or are scouts or guides, but multitudes beyond, the week-end campers, that host of lads and lasses in shorts who bike or hike along country roads all over the world, a noble army of those who seek health in service Whatever form of immortality awaits us lesser folk, whether it be merely that we are transmuted to the wood and leaf of the churchyard elms, or flung to the four winds in gaseous form from the necropolis chimney, or sprout wings, or play on golden harps, this is certain, that for generations to come, whenever youngsters gather round a camp-fire, whenever the call of spring and adventure takes them into the wilds, whenever the joys of service summon them, B-P will be with them, sharing in their zest

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After half a lifetime spent in the laboratory in unusually complete detachment from clinical medicine, I am finding a "war-emergency" return to the bedside absorbing Stout Cortez was not as stirred as I when I recently watched the meningococci in a daily smear become sparse even unto extinction under attack by sulphapyridine while the patient miraculously recovered, or a pernicious anæmia, thirty years ago to be labelled doomed, now burgeoning reticulocytes after a few injections of liver extract Rip Van Winkle could not have had the thrill of returning to anæsthesia, and, instead of half-narcotising himself daily with a too generous ether or chloroform fog, toying with the admirably efficient and almost foolproof gadgets of a late-pattern MacKesson And what a boon are premedication or anæsthesia with the barbiturates, and chemotherapy in pneumonia, and to help while a pulseless dying bombtorn victim is being plucked back by the wizardry of plasma transfusion, or a marble-white hæmatemesis grows rosy pink, is an experience to have lived for But alas I see that patients still die from ileus and exhaustion in the time-honoured manner General surgery does not seem to have moved much, and am I pernickety in blinking when the physician still visits his patient in uncovered outdoor garments and sans mask? As for minor horrors, my recent boil in a hardly respectable locus still bred its family of baby boils in the authentic tradition, despite the wheedling of mag sulph paste

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Near one of the City's most famous landmarks may be heard the sound of picks and shovels, the rattle of pneumatic drills and the hissing of oxy-acetylene burners cutting through twisted girders and battered steel plates A vast crater teems with Pioneers breaking up masses of concrete, which are hauled up by big cranes It was the custom of the shelterers at this underground station to deposit their bundles down on the platforms and in the deep corridors, and then to come up to the booking-hall, just below street-level, where they found a well-lighted balcony with shops all round This was their Brighton pier, and for an hour or two before retiring for the night they were in the habit of promenading round, leaning over the railings, watching the escalators (on which children used to play) and gossiping with their friends It was Saturday evening, and the Shelterers' Parade was in full swing It is true that the sirens had sounded, but that was a long while ago, and no bombs had been dropped anywhere within earshot Not even a gun had been fired for about twenty minutes A policeman on point-duty overhead must have been almost the first to realise that danger had suddenly become imminent he heard the familiar sound "as of a rushing mighty wind" and he ran for his life to the nearest cover He was only just in time, next moment the city was shaken by a deep roar—a large bomb had fallen into the booking-hall and blown the roof off Concrete was hurled into the air, the blast travelled down the wide escalator shaft and through the open doorways, sweeping all before it, throwing people off their feet—many fell on to the line, of whom two, a soldier and a policeman, were thrown in front of a train which was just entering the station. Help for the victims was not long in arriving A mobile unit from the City corporation was soon on the scene, and even before this, a few yards from the crater, a dressing-station was set up in a surface-shelter in which two nurses attended to people who had been caught in the street A man lay on his back in the roadway, crying softly to himself, "Oh, my belly! Oh, my belly!" He had a ragged tear across the upper abdomen, his clothes were torn half off and his face so blackened with road dirt that he looked like a negro It was the work of but a moment to apply a sterile triangular bandage to the whole abdomen, pull his tattered shirt and waistcoat down over it and adjust his wide leather belt to hold the dressing in place A Tubunic ampoule of Omnopon was injected into the abdominal wall—both his arms were as black as his face Already a stretcher-party had arrived, and he was taken off to hospital Against the wall of a near-by building the police had propped up a row of casualties—a fractured forearm, a girl with a gash down the side of the face, a man with the top of his head knocked in (no pulse, blood-stained froth on his lips, quick, jerky inspiration followed by slow, bubbling expiration, probably due to hæmorrhage into the lungs—a common effect of exposure to blast at short range) As soon as these cases had been dressed we turned to explore the booking-hall and its approaches

Walking warily—for the street was littered with debris, and wide cracks had appeared in the paving manhole covers were missing, and the asphalt hung perilously over the edge of the crater—we entered one of the stairways leading down to the station About ten people were lying on the stairs, one had all his clothes torn off, another had a leg missing, severed at the knee, all were black with grime and every one was dead Halfway along the corridor our torches showed someone moving his arms, it was difficult to reach him, for the passage was almost choked with masses of concrete and twisted steelwork Also, there was a strong odour of coal-gas, a moment later this caught fire, but was soon extinguished He was trapped by his legs under a huge slab of reinforced concrete but already the rescue party was getting to work with jacks and levers, he was given an injection of omnopon (tubunic, of course—it was no place to try to fill a syringe) It took an hour to get him out, in the meantime he was made as comfortable as possible, with his head pillowed on the legs of a dead man just in front of him A woman's handbag lay on the floor, we peered into every dark crevice under the debris to find the owner, but there was no sign of her Either she or the handbag might have been blown a long way We went down by the emergency stairs to find that a large number of people had been injured below ground When a bomb explodes in such a confined space as this distance is of less importance than the width of the passages, and they happened to be exceptionally wide in this station The first necessity was a bucket of water and a large swab, even here the wounded were covered from head to foot with dirt It was impossible to do more than a hasty toilet, then apply those handy "mine dressings," each in a sealed paper covering, and with an adequate length of bandage attached, there are three sizes, and a small haversack will hold half a dozen small, a dozen medium and half a dozen large These, with a dozen sterile triangular bandages, also in sealed paper envelopes, a soft rubber tourniquet and three boxes of tubunics, provided all the outfit required for attending to some thirty or so of the casualties The highest praise is due to the station staff, who brought water, stretchers and tea to the improvised dressing station and operated a lift to the waiting ambulances In just an hour and a quarter the last of the injured was on his way to hospital But there was one case more, twenty hours later they found the booking-clerk, still alive, but terribly injured, he had been trapped in a corner of the entrance hall Hammers are swinging, the cranes whistle and clang, Pioneers sweat and tug at the chunks of concrete and tangled steelwork, already the site has been largely cleared and spanned by a temporary bridge for city traffic must pass, and under and around the bridge the engineers will set to work to rebuild the upper part of the station Tonight the shelterers are huddled along the platforms and deep corridors, there is no more Brighton pier for them Even their accustomed minutes with a solution of 3% anæsthesin in olive oil beforehand It was the use of this method which made me suggest in 1933 that there was another factor in hæmorrhage besides the factor of coagulation of the blood, something akin to a " turning off of the tap " as it were Hæmorrhage in a good many cases is not due to poor coagulation, but rather to the fact that the ends of the severed blood-vessels fail to close, and it is this factor which is usually present in dental operations

Sutton Coldfield, Warwick E VAUGHAN TOMEY

B M A MEDICAL PLANNING COMMISSION

SIR,—We have read with interest and appreciation your leading article of Jan 11 and the letter of Sir Ernest Graham-Little in the following issue It is a matter of regret and anxiety to many members of the profession that the British Medical Association, which is in reality a club of which membership is still voluntary, should be so widely regarded as representative of the whole profession Now that this body, which through its war committee was largely responsible for our present emergency service has set up a further committee to advise on post-war organisation it seems desirable to emphasise this point Even if the recommendations of this commission should prove more acceptable than ose of its predecessor they should in no way be regarded the considered wishes of the whole profession nor put to force without further consultation As junior embers of the profession we would especially support our criticism that the opinion of members of less than n years standing is not represented on the commission We feel that the future might fairly seem to be a major interest for us

ALASTAIR HUNTER,
KENNETH M A PERRY
London Hospital E 1 J MICHAEL VAIZEY

SIR,—A number of your correspondents have thought t—and rightly so—to criticise the constitution of the ommission on the grounds that the more junior members f the profession are not adequately represented This neglect of the younger medical man's point of view is ar-reaching and worthy of detailed consideration Until a few years ago medicine was even more predominantly in the hands of older men than it is today, when many of our most brilliant workers are men qualified in the last ten years , and the general public is becoming reconciled to the idea of a beardless doctor whose name has been on the Medical Register for a comparatively short time This has been one of the changes brought by the last war, but what greater changes may now be possible in a world which regards with equanimity changes and upheavals occurring almost overnight ? This relative ascendancy of the young man has come in great measure from outside the profession, and many of his present-day advantages have been accorded him with comparatively little effort on his part This may account for what seems to be his lack of interest in modern trends and tendencies At the beginning of the war a large number of hospital residents like myself were offered contracts by the Ministry of Health at salaries beyond our wildest dreams , but when these were peremptorily cancelled by a stroke of the ministerial pen, many of those affected had scarcely a word to say about it, and the ultimate restoration of the original terms was due to their good fortune and the good sense of the ministry, and not to any vigorous protestations from the doctors themselves At the same time, most of us had offered our services to the armed forces, but we remained subject to the rulings of local war committees, many of them composed of retired men who had little but local politics to occupy their declining years, and upon which we had no representation For example, of a committee of six in my own part of the country only one knew me personally , and I have often wished that they had judged me unsuitable for work in the Forces, for I would then have had an opportunity to explain some of the shortcomings of the E M S Surely it is evident that though the young postgraduate has been hardly used and looks like being in the rear rank again, it is in some measure his own fault and is due to his lack of interest and inertia ? Young men in medicine, as in every other walk of life, must fight their own battles Fourteen months as a " civilian in uniform " has shown me that young men in other callings have thought a great deal about the post-war period and are resolved not to allow their opportunities to slip by or be taken from them as they were from their prototypes after the last war Young men in medicine today work hard as hard as their fathers before them, but they tend to lose the broad view which we need so much today , and this arises partly from the ignorance of their elders and partly from their own sloth This war is primarily one of opposing sections of the youth of the world, so let us be afforded an opportunity to add our ideas and counsels to those of our elders so that we in due time may accept more of the responsibility which is at present theirs alone

Hammersmith, W 6 E N OWEN

DYSPEPTICS IN THE ARMY

SIR,—Professor Hartfall in his letter of Jan 25 criticises the findings which we put forward in our " Interim Report on Dyspepsia in the Army " (*Brit med J* 1940, 2 819) We must point out that he is under several misapprehensions First, the field work of this investigation was carried out in January-April 1940 In consequence our cases from the B E F contained a very high proportion of men who were reservists or supplementary reservists Secondly we were confining our investigation to men who were regarded as suffering from gastro-duodenal disease whether organic or not, and we were not directly concerned with the various types of reflex dyspepsia Thirdly, Professor Hartfall refers to our " alleged unselected cases " Under the heading of clinical material we give an account of our approach to the problem In the case of B E F troops we were provided with nominal rolls of all men invalided to this country In each hospital we saw each case which had been sent over with a provisional diagnosis of any type of gastro duodenal disease or complication of this, and also all cases which were labelled more vaguely as dyspepsia, &c Our report is therefore correct in stating that we saw " a representative and unselected sample of the dyspeptic cases being invalided home from France " In the case of the local sick seen in the military hospitals we could not follow such a course But we obtained from the medical specialists lists of all dyspeptic cases Again the selection of the material was not ours We feel that if Professor Hartfall will read our report again in the light of the foregoing he will be less inclined to find our conclusions " wholly incomprehensible "

Professor Hartfall also suggests that our findings represent a " wish fulfilment " because they include a high incidence of peptic ulceration Before our investigation it was considered that the high proportion of dyspeptics being invalided from France might mean one of three things—new gastro-duodenal ulceration the breakdown of old-standing ulceration, or a new condition of " soldiers' stomach " Our wish in the matter—as far as we had any—was to find sufficient new ulcer cases to make detailed analyses of the possible ætiological factors of some value Neither of us has the slightest doubt of the importance of psychological factors in gastro-duodenal disease, or of the importance of functional dyspepsia And in every hospital we visited we took the opportunity of discussing these aspects with the consulting psychologists The opinion of the clinicians in the E M S hospitals was uniformly that a dyspeptic case from France was almost always an ulcer case In military hospitals there was a tendency to suspect malingering in all cases (including the gastro-duodenal ones) and at the same time to blame the presence of consulting psychologists in the Army for an increase in supposed neuroses

Our diagnostic criteria also come under Professor Hartfall's criticism In every case the fullest possible history was taken, often occupying 1–2 hours This included details of every job the man had ever had, his economic conditions and his dietetic habits , and it was correlated with his general health and any dyspeptic symptoms at the various stages After this all the laboratory data were examined Admittedly these data were not always as complete as they might have been We then discussed each case in the light of all the information obtained, and our diagnosis was based on a summation of the evidence In almost every case the clear-cut history which we received would have satisfied even the most sceptical that we were dealing with organic disease improvement is said to have taken place Although the diet was preponderantly carbohydrate, on account of the cirrhosis, there were no further clinical symptoms of diabetes This is ascribed to a diminution in the glycogen reserve in the cirrhotic liver, or to a compensatory hypertrophy of the pancreas

Letters to the Editor

ARTIFICIAL SHORTAGE OF DOCTORS

SIR,—It was high time that this subject should be brought to the notice of our profession and of the general public, and you are to be congratulated on dealing with so grave a matter in so judicial a way It is possible to sense that but for your responsible position there was more that you wished to say This fictitious shortage is primarily due to the demands of the Army Medical Service, for the Navy and Air Force seem to have exercised praiseworthy restraint in their demands As you have indicated in your final paragraph it is essential that the requirements of our overseas and home services be considered separately

Overseas forces on active service must be provided with adequate medical personnel under military discipline Are we not entitled to ask, if the Army Medical Service is not guilty of extravagance in the number of medical officers it requires for each type of unit? The establishment of these is said to be confidential and one can understand the reluctance of the Army Medical Department to reveal the voracity of its appetite, but in fact the figures are well known as they appear in those textbooks and manuals which assist officers in their promotion examinations A general hospital of 1200 beds is allotted 34 M O s in addition to a quartermaster and three padres—a generous allowance to say the least Other units are catered for on an equally lavish scale It is a rigid insistence upon this establishment which is threatening to strip civilian medical reserves at a rate which is heading straight for disaster It is permissible to ask why nearly all our best young men put their names down for the Navy or Air Force and unwillingly take the Army when told that the other services are full Among many other reasons is the advice given by friends who joined up earlier " Whatever else you do, don't join the R A M C there are lots of us here and nothing to do "

When we turn to the home front, the extravagance and wastage of personnel could find no better example than that quoted by you—the creation of 12 orthopædic centres in the Army—and yet this is only symptomatic of the whole Taken by itself, however, it is a cogent reason for pooling our resources in both men and equipment, as one illustration will suggest Rehabilitation has been a favourite word of late, but only its fringes have been explored by either civilian or military authorities In the Services when a man is boarded out as unfit he is thrown back into civilian life without ever having been given the benefits of these army centres , such a man with a pittance of a pension and unfit for work becomes a liability and not an asset to the community Surely this economic futility could be avoided by pooling our resources Whether a man be in khaki or dark or light blue he is still an individual member of the community and when sick or wounded is entitled to the same care and treatment as the sick or wounded civilian—neither more nor less Why then in England should he be treated separately ? Matters of service discipline and organisation arise when uniformed patients are treated in civilian hospitals but that has already been solved in the E M S hospitals This pooling of doctors is redolent of State Medicine, and I confess to being apprehensive of recent talk upon this subject, for the times are not conducive to sane and balanced thought upon an indefinite future But if this pooling of our resources is state medicine then I am well on the way to conversion

In spite of what you say this is a clash between rival claimants, not for personal but personnel ends, and as more than one great department of state is involved the final court of appeal presumably is the Cabinet If it wishes to ensure adequate medical attention for every section of the community in the testing times which lie ahead it must move and that right quickly

Harley Street, W 1 R M HANDFIELD-JONES

THE BLEEDING TOOTH SOCKET

SIR,—Many dental surgeons will regret the opening paragraphs in your annotation of Dec 28 (p 814) You appear to imply, although you do not actually say so, that dental hæmorrhage arises through a fault on the part of the dental surgeon, who shirks his responsibility, but this is rarely so Most dentists are only too willing and anxious to treat their own cases of dental hæmorrhage It is a well-known fact that the dentist in nearly all cases is better equipped to do so than the doctor, but serious cases do arise where the coöperation of the doctor and the dentist is essential The patients are responsible for calling in the doctor and they have a perfect right to call in medical aid, particularly if they are panel patients Medical men do not quibble about attending a wealthy patient in the middle of the night for dental hæmorrhage, and often take the case out of the dentist's hands, but if it is a panel patient, and there is no fee, well—that is where the shoe pinches The correct procedure is for the doctor to ring up the dentist at his home, and ask him to attend, and then for the dentist to call in the doctor, if necessary Your statement that hardly any of the cases which give trouble after dental extractions are hæmophiliacs is only partially correct All hæmophiliacs give trouble after extractions, and the greatest possible precautions have to be taken The class which gives greatest trouble is the pseudo hæmophiliac In true hæmophilia we know the male inherits the condition and the female passes it on , she is not herself a true hæmophiliac, but is often a pseudo-hæmophiliac Dental hæmorrhage often arises in females because the extractions have been done during, or immediately preceding the onset of the menstrual period A wise dentist will always make inquiries before proceeding with extractions, particularly multiple extractions, in females

Hæmorrhage usually takes place from the apex of the socket, and is often caused by the disruption of a dental abscess, or granuloma at the apex of the tooth To stitch over the gums of a true hæmophiliac is dangerous, because hæmorrhage would immediately take place from the trauma caused by the needle If the bleeding point is from the gums around the socket, then the actual cautery is very efficient Venom of the Russell viper is also very effective for this, but if the hæmorrhage is taking place from the bottom of the socket, as is usually the case, it is almost impossible to apply this to the bleeding-point, since it is washed away by the hæmorrhage *In my opinion, there is only one* safe, effective and never-failing remedy, and that is the treatment I discovered accidentally about twenty-five years ago, and have published several times in dental journals It is this a hard tampon of cotton-wool, about the size of the *root socket*, is put *into a liquid made up of* equal parts of liquor ferri perchlor , liquor hydrarg perchlor , and glycerin It is then dipped into tannic-acid powder and pressed firmly into the socket, being kept in situ for a few minutes with the end of the finger, and left in for twenty-four hours This black pack contains no free perchloride of iron (which invariably causes sloughing and further hæmorrhage), because the perchloride of iron unites with the tannic acid to form a tannate of iron Tannate of mercury is also formed, and free hydrochloric acid. Anæsthesin (benzocaine) is also invaluable, because it causes a constriction of the walls of the blood-vessels, and this may be added to the tannic acid with advantage

Patients should not be allowed to rinse the mouth after extractions, not even a single mouthful Water weakens the clot, causing a wash-leather surface, instead of a hard glazed surface Mouth-washes for after-treatment are a mistake, particularly hydrogen peroxide or sodium perborate, for these dissolve the blood clot The gums should be swabbed with a mild antiseptic on cotton-wool Patients should be instructed not to suck the gums, or poke the sockets with the fingers Tea should be prohibited Dental hæmorrhage often commences twenty minutes after taking a cup of tea For all known or suspected " bleeders " prophylactic treatment should be prescribed calcium for three days prior to extractions, or injections of hæmoplastin, plus vitamin K I have for some time done extractions for these patients when necessary, after may vary in different people. It is my opinion that Sheehan and Sunderland, whom you quote in your annotation of Jan 18 (p 82), are correct in stating that in cases of mitral stenosis even when fatal there may be no myocarditis, with the proviso that there may be changes in the neuromuscular heart wall we cannot detect or have not detected, though this I personally doubt. When there are recent vegetations (to state the age of a vegetation is not easy) possibly there may then be some myocardial weakness perhaps only passing, yet sufficient to turn the scale adversely.

Naturally as an Englishman I challenge the statement that Mackenzie was the cause of the radical change in our views about the myocardium. The first part of my work on rheumatism in the last century was to prove clinically, pathologically and later experimentally the importance of the myocardium in rheumatic heart disease, and I dare to claim some credit without being derogatory to Mackenzie whose work no-one could harm. William Broadbent and many others in London recognised the importance of the myocardium, among them D B Lees, who joined with me in my first paper (*Med -chir Trans* 1898, 81) on the subject.

Bath. F John Poynton

VAGARIES OF THE PAUL-BUNNELL TEST

Sir,—The value of the Paul-Bunnell test in the diagnosis of glandular fever promises to become a matter of controversy. Whilst there is now a concensus of opinion that a positive agglutination reaction between sheep's red corpuscles and the patient's serum is strong confirmatory evidence that the case is one of glandular fever there appears to be some doubt as to the significance of a negative agglutination test. Bernstein indeed, in a recent review (*Medicine, Baltimore*, 1940, 19, 85), seems inclined to consider that a negative Paul-Bunnell test justifies the exclusion of the diagnosis of glandular fever, but few clinicians would be prepared to go as far as this, for it is undeniable that there are many cases presenting clinical features of this disease in which the test is persistently negative. The situation is well exemplified by the two papers in your issue of Jan 18; Dr Barber reports 8 cases in each of which the test was positive. Dr Fuller reports 5 cases, clinically similar, in 4 of which the test was negative and in 1 positive only to an insignificant degree. Dr Fuller's patients were undoubtedly more ill, and they also differed in the frequency with which Vincent's organisms were found in the throat and in the fact that they were treated with sulphonamides. Otherwise the two series were very similar, in both the patients were febrile, had angina enlarged cervical and axillary glands, and the differential white count showed a percentage increase in mononuclear cells. Clearly there are two possibilities on this evidence, either the clinical and hæmatological picture of glandular fever embraces other diseases which can only be distinguished from true glandular fever by the absence of a positive Paul-Bunnell test, or the Paul-Bunnell test is an inconstant feature of glandular fever capable perhaps of being modified by treatment or of varying with the stage of the disease. It is clearly desirable to decide between these possibilities and consideration of the hæmatological picture in the two types of case appears to give a clue to this end.

Anyone who is familiar with blood smears from this type of case stained with the Romanovsky stains is aware that there may be some difficulty in differentiating between monocytes and the different types of lymphocyte present. Some clinicians may have had the experience as I have, of finding that different pathologists, while agreeing on the figure for the number of mononuclear cells present, differed markedly in the proportion of these cells they assigned to the category of lymphocyte or of monocyte. Nevertheless an examination of the blood-counts in Dr Barber's and Dr Fuller's papers suggests that such differentiation may be worth making accurately. When the numbers of the different types of white cells given for their cases are expressed not as percentages of the total number of white cells present but as the number of such white cells per c mm it will be seen that, while there is no apparent correlation between the Paul-Bunnell test and the number of polymorphonuclear cells or lymphocytes, there is a hint of a correlation between the test and the number of monocytes present. In Dr Barber's series of cases, all of whom showed a positive Paul-Bunnell test, the average number of monocytes per c mm is about 2150, in Dr Fuller's series the average is within normal limits at 520 per c mm. It is perhaps significant that the one case of Dr Fuller's whose serum agglutinated sheep's red cells showed the highest monocyte count of his series. The range of the figures for monocytes in the two series certainly overlap, and thus only allow a tentative suggestion that the difference is significant, but in view of the difficulty of differentiating monocytes from lymphocytes in these cases by the stains in routine use this objection may be resolved when staining techniques giving more sure differentiation are used. On examining the blood-counts from similar cases of my own the same relationship between a positive Paul-Bunnell test and an absolute monocytosis was found in general to hold. One of my cases, already reported (*Lancet*, 1940 1, 1082), is of especial interest. The illness lasted three months and while the differential count expressed as a percentage showed a relative mononucleosis throughout, the differential count expressed as the number of cells per c mm did not indicate a monocytosis until the last month of illness. At the commencement of the illness the monocyte count was 468 cells per c mm and the Paul-Bunnell test was negative, at the end of the illness the figure was 1530 and the test was then positive.

The next step in the investigation of the clinical syndrome now designated under the single title of glandular fever might be the collection of accurate data concerning the association in this condition of monocytosis and a positive Paul-Bunnell test. To this end the blood from such cases should be examined by staining techniques which permit the accurate recognition of monocytes. And to facilitate appreciation of the results thus obtained the common practice of expressing the differential count as a percentage of the total number of white cells should be discarded in favour of expressing the count as the absolute number of cells per c mm. Should the above association be established then it is evident that it will have not only practical value but a considerable theoretical interest as showing a correlation between the increase of a certain type of cell in the blood and the development of a particular serological reaction.

H P Himsworth

University College Hospital Medical School

DEATH ON THE TABLE

Sir,—I was talking to a colleague about the question of resterilisation of the operating theatre after a death has occurred on the table. We were wondering why this was done. Inquiries from nurses sisters, and books have only told me two things:—

(*a*) No one really knows, but it's in the books and has been for years.

(*b*) That some evil spirit leaves the body at death, and desterilises all the equipment.

Is this custom a relic of the surgery of the past century? The "evil spirit," no doubt, is the *Bacillus coli* which is known to permeate throughout the body tissues after death has taken place, but I cannot help thinking that this could be of no practical significance when the body is on the table for such a short time after death.

Has anyone got a really sensible answer to this question?

Chichester John Gordon

BERGSON IN LONDON

Sir,—In the press notices to which the recent death of Henri Bergson have given rise it appears to have escaped attention that the eloquent author of "L'évolution creatrice," some thirty years ago, lectured at University College London. It was perhaps not without significance that the subject of the lectures at what has been satirically, but unjustly, called the Godless College should have been "the nature of the soul." The first of the four lectures was delivered on Oct. 20, 1911, in the botanical theatre of the college. It fell to me as vice-chancellor to preside, and among the large audience were the French Ambassador Sir Francis Goodenough Dr Sadler, Dr Miers, Dr Caldecott and Dr Dawes Hicks. The lecture was delivered in French and gained lucidity thereby, while the subject though recondite was

In the "proved ulcer" cases this was supported either by the evidence of the complications of ulceration, by the laboratory evidence, or even by the objective evidence of abdominal scars. In the absence of confirmatory evidence the cases were labelled as "probable ulcers." To adopt the position which was sometimes urged of "no ulcer without a demonstrable crater" would have been to lose sight of all diagnostic perspective. In this connexion we can only repeat conclusion 12 of our report: "Our experience proved that the sorting of serious case in France for invaliding to this country was very efficient." It is clear, therefore, that we were investigating dyspepsia in the Army as it presented itself in the early part of 1940 in men from the B E F and amongst the local sick. Both of us were impressed by the very small number of neuroses. The evidence which we received did, however, suggest that in the base hospitals in France there was a higher incidence of neurotic cases than was present in our material. A proposed visit to France to investigate cases on the spot was rendered impossible by the military situation. The evidence which we have recently received suggests that the dyspepsia problem now shows a much smaller proportion of organic cases, and an increase in the neurotic ones running parallel with the increase of neuroses in the Army. This is not in the least surprising, and it stresses the need for an accurate diagnosis in the individual case. The conclusions which we have put forward in our report relating to the importance of organic disease in the clinical material which we investigated were confirmed by the experience of the medical officers in the various E M S hospitals, and, with the reservations referred to, by the medical specialists in the Army. We can only report the results of our investigation on the basis of our data. To ask Professor Hartfall to accept these might lay us open to the charge of "wishful thinking."

Harley Street, W 1

REGINALD T PAYNE,
CHARLES NEWMAN

SULPHATHIAZOLE IN CEREBROSPINAL FEVER

SIR,—The results of treatment of cerebrospinal fever with sulphathiazole described by Dr Banks in THE LANCET of Jan 25 will arouse considerable interest and surprise among practitioners who have used the sulphonamide drugs in various infections, including cerebrospinal fever; certain deductions are drawn which are, we feel, not justified by Dr Banks's explanations. Dr Banks says that he regards as "dangerously low" a dosage of 6 grammes of sulphapyridine a day for an adult. It is difficult for the impartial reader to follow his reasons for such an assertion, reasons he discusses in the course of his paper. In the first place, he quotes two cases on this dosage which, "still had meningococci in the C S F after 2½ days' treatment, a thing which never occurred after sulphathiazole in standard dosage." Surely the ultimate ideal of treatment is the cure of the patient with the absence of sequelæ, which anyone would be satisfied to achieve in a week or a fortnight in such an important disease as this! Dr Banks describes two cases to illustrate the fate of patients treated on this scale of dosage. In case 1 the relapse occurred after a dosage of 9 g a day at first and a total of 15 g sulphapyridine and 43 g of sulphathiazole in ten days. Surely this relapse followed the higher dosage as advocated by Dr Banks; it is an error to say that it was the result of treatment on the lower dosage of sulphapyridine previously given for no more than two days.

Dr Banks considers that two days' treatment with sulphapyridine should be enough to eradicate the disease, but he will find it hard to persuade people to believe such a result either possible or necessary, or to convince your readers that the relapse in case 1, as he asserts, was "associated with the low dosage (6 g) of sulphapyridine in the first 2½ days." We have ourselves treated a few cases of cerebrospinal fever and other infections successfully on what Dr Banks terms the "low dosage" and have never regretted it, nor could we have desired better results than we achieved. We have also heard of cases successfully treated by others on similar lines. We are sure practitioners all over the country will endorse our evidence that 6 g a day for the average adult is adequate. If this is so, the prevention of the use of too large doses all over the country would, we feel, contribute to the avoidance of toxic manifestations from this group of drugs. At the same time equally good results would be obtained on the dosage now widely and generally used with such success, dosage which has given clinical success on every occasion in our experience when success could have been reasonably expected and has not been associated with the "danger" which Dr Banks describes.

Park Prewett Hospital,
Basingstoke

PHILIP H WILLCOX,
GEOFFREY CUTTS

HOSPITALS AND THE WAR DAMAGE BILL

SIR,—Some indirect effects of the War Damage Bill now in committee before the House have not, I think, been realised by classes affected by it. Clause 29 deals with "property held for charitable purposes," in which these two categories are included:

(1) The treatment of sickness, disease, or injury, whether physical or mental;

(2) The advancement of education, science, or research.

Category 1 directly concerns the medical profession. Category 2 interests educationists and in particular universities, colleges and teaching hospitals. A parliamentary expert much more skilled than I can claim to be in assessing the effect of proposed legislation, informs me that this clause prescribes that in return for compulsory acceptance of the "concession" of one-third only of the normal contribution (or premium) the War Damage Commission, the members of which are all appointed by the Treasury, may "if they think fit" make a compensation payment, "subject to such conditions as they may in their discretion determine." These conditions could, in the case of a hospital for example, entail rebuilding on prescribed lines in prescribed places; alter the composition of the governing body; control the appointment of staff; destroy the traditions, and impose a large measure of state management. In the case of an educational institution, the commission could, in addition to these activities, vary the curriculum, prescribe the examinations and standards of qualification, and make many other changes, not at present contemplated by the authorities concerned. It is useless to say such things could not happen; these powers are being incorporated in an act of Parliament, and may at any time be exercised.

House of Commons

E GRAHAM-LITTLE

THE RHEUMATIC HEART

SIR,—Over many years I studied rheumatic heart disease closely. No form of heart disease has attracted me more than mitral stenosis, because it is the most important; I have seen it fatal at 4 years and not fatal at 70. I have often directed attention to the question whether advanced mitral stenosis might result from one attack of cardiac rheumatism or must be the result of many slight attacks. Indeed this type is more suggestive of the rheumatoid changes in the fibrous tissues of the spine and other joints than any other form of heart disease. Of this I am certain—a case of long-standing mitral stenosis may after death show no myocarditis as seen by microscopic examination, and the strain on the right heart with its complications has probably been the cause of death. I am equally certain that small vegetations on the mitral valve with little or no myocardial damage are, as one would expect, not likely much to embarrass the action of the heart. This is shown by the almost complete recovery which I have observed many times and watched over for years. On the other hand, if these vegetations are associated with severe myocardial disease and damage to the mitral ring the course may be rapidly downward. This is one reason why the modern teaching that a systolic mitral murmur is not important is wrong, for this murmur may lead to the discovery of the real state of affairs.

When one finds a patient of 60 or upwards with mitral stenosis there are various factors to be considered. Is this the result of a single attack in early life followed by a very slow contraction of the valve with which the heart keeps pace? Is it the result of many slight attacks spread over many years? Is it the result of an attack of cardiac rheumatism unusually late in life, and possibly overlooked? Has the patient always lived a guarded life, or, for example, lived at the top of a steep incline? Do the fibrous tissues of one individual differ from those of another in their tendency to contraction? We know certainly that the power of the heart muscle from childhoo calling up of younger men and by the greatly increased demand for medical attention to the civil population during the winter months —Captain MARGESSON replied Applications for the temporary release from the Army of medical officers to meet the needs of the civil population have been, and will continue to be, sympathetically considered, but it must be remembered that the Army can ill spare their services

Sir F FREMANTLE Does the Minister realise that something like 8000 medical officers have been taken from civil services to the forces although civil needs are greater now than they were in normal times, because of bombing casualties ? Is he aware also that a very large number of Army medical officers have very little to do, while the civil services offer a very great deal of work that they can do ?

Mr RHYS DAVIES Is the Minister keeping in touch with the Ministry of Health on this problem ?—Captain MARGESSON Yes

Medical Referees

In reply to a question Mr O PEAKE, under secretary to the Home Office, said Ophthalmologists have been appointed as medical referees under the Workmen's Compensation Act for the sheriffdoms of Lanark, Lothians and Peebles, and Renfrew Medical referees to deal specially with cases of scheduled diseases (including dermatitis) have been appointed for the sheriffdoms of Lanark and Renfrew The Minister appreciates that it may be desirable to strengthen the panels of medical referees in these and other areas by more extensive appointments of specialists, and he will be very glad to consider representations in regard to any particular area, but experience shows that it is extremely difficult to secure the services of suitable specialists as referees under present conditions

Health Services at Newquay

Mr P L HORABIN asked the Minister of Health whether he was aware of the unsatisfactory state of the health services in Newquay, and whether he proposed to take any action to improve them, in view of the large increases of the population due to the billeting of official evacuees in the town.—Mr M MACDONALD replied I am aware of the position in the district The county health services have recently been strengthened by the appointment of an additional assistant county medical officer, the seconding of six school-nurses to the county by the London County Council, and the expansion of the district medical service Local health services have been improved by the establishment of a general sick-bay and of a special sick-bay and clinic for skin cases Further steps at present under consideration include the appointment of another assistant county medical officer, part of whose time would be devoted to this area, and the provision of additional hospital accommodation for cases of infectious disease

Gastro-duodenal Disease in the Army

Sir FRANCIS FREMANTLE asked the Secretary of State for War what percentage of cases invalided from the British Expeditionary Force to this country were suffering from gastro duodenal disease, and whether strict instructions would be given to recruiting boards to reject men with a history of organic dyspepsia and save the loss and inefficiency caused thereby to the Army —Captain MARGESSON replied The percentage of patients suffering from gastro-duodenal disease among hospital cases invalided from the British Expeditionary Force was 11 76 As regards the second part of the question, strict instructions on the point have already been given to recruiting medical boards —Sir F FREMANTLE Is the Minister aware that these instructions are not very effective, and that these men are a very great cause of trouble, loss of morale and inefficiency in the Army ? Is it not a great waste of Army effort, and should not an effort be made to bring the facts home to recruiting boards ?—Captain MARGESSON I will press the matter in that direction.

Mr C STEPHEN Will the Minister see that in cases where men are weeded out pensions will be given ?—Captain MARGESSON That is a matter for the Ministry of Pensions

Inoculation in the Services

Mr W LEACH asked the First Lord of the Admiralty whether he was aware that a number of men in H.M S *Colombo* had been deprived of shore leave for refusing inoculation, and whether, in view of the fact that the *reports* on the health of the Navy disclosed the occurrence of a considerable number of cases of typhoid fever in inoculated men, he would follow the precedent set by the Admiralty in the last war when similar cases of deprivation of leave occurred and permit objectors to inoculation to have leave in the same way that inoculated men were allowed it —Sir VICTOR WARRENDER, parliamentary secretary to the Admiralty, replied Men who have declined inoculation against a particular disease are by Admiralty order precluded from receiving shore leave at places where that disease is liable to be contracted This is a precautionary not a punitive measure, and in other places no restriction is placed on leave I am aware that a number of men in H M S *Colombo* have refused inoculation and have, therefore, been refused shore-leave at various places The rule mentioned above was introduced in 1916 I can find no instance of any exception to it After careful consideration I do not feel able to authorise any exception now in view of the importance of taking every precaution to prevent the introduction of disease on board one of H M ships, especially in war time

Reinforced Flour

Sir ERNEST GRAHAM LITTLE asked the Parliamentary Secretary to the Ministry of Food if he still proposed to add to the flour for the reinforced loaf, described in the debate on July 18, a certain undefined proportion of a calcium salt, whether he was aware that a recent research based on experimental and chemical data and conducted at the Liverpool Institute of Research threw doubt upon the assumption that there was any general deficiency of calcium in the people's diet, and indicated that there was danger in increasing the calcium content in the manner proposed —Major LLOYD GEORGE replied The answer to the first part of the question is yes As regards the latter part of the question, the Minister is advised that the results of the research work referred to are under consideration on behalf of the Medical Research Council, but that it already appears that there are reasons for mistrusting the conclusions drawn from the Liverpool experiments

Mr LEACH Will white flour unadulterated with vitamin B and calcium salt be available after the fortified white flour is put on the market, and will the fortified white flour be labelled to show that chalk and a chemical substance have been mixed with it ?—Major LLOYD GEORGE The decision announced on behalf of the Government in the House on July 18 concerned the addition of vitamin B_1 and a calcium salt to white flour used for bread making No decision has yet been reached on the question of similarly fortifying all white flour

Convalescent Homes for Seamen

Miss E RATHBONE asked the Minister of Health whether he was satisfied that there was sufficient provision of convalescent homes for merchant seamen and trawlermen, whether he was aware that many of them, especially from the trawlers, had to go straight back to their ships from hospital, how many of such homes existed, and whether the number could be increased or other convalescent accommodation provided —Mr MACDONALD replied Apart from the convalescent accommodation specially provided for this class merchant seamen and trawlermen who are casualties are treated in the emergency hospitals and convalescent homes Approximately 100 of the latter have been opened under the Emergency Scheme and others will be available later The question of admitting merchant seamen and trawlermen who fall sick or require treatment for other reasons into these convalescent homes is under consideration

Imported and Non-essential Drugs

Sir FRANCIS FREMANTLE asked the Minister what steps had been taken to limit the prescription by medical practitioners of non-essential imported drugs, and the sale of such drugs as ingredients in proprietary medicines, and to suggest alternatives produced in this country —Mr MACDONALD replied A defence regulation has been made on this subject and its details will be published in the course of the next few days

Gas Helmets for Babies

In answer to a question Mr HERBERT MORRISON said that his department had issued about one and a quarter million anti gas helmets for babies

Transfers of Panel Patients

Mr T E GROVES asked the Minister whether he would now arrange that any panel patient whose chosen practitioner had joined the forces might forthwith transfer to the list of any remaining practitioner willing to accept him, without regard to any unofficial scheme for the protection of practices which might be operating in the district —Mr MACDONALD replied In view of the very general participation of insurance practitioners in these schemes and the importance of safeguarding the interests of practitioners who have undertaken war service, I see no sufficient reason for action never obscure Professor Bergson trounced the popular doctrine of psychophysical parallelism, holding "that we obtain through consciousness a metaphysical knowledge of mind" Among his contentions were—"that change and movement are in reality simple and that state and rest are composite" Again, "that it is in pure duration that the substantiality of the soul consists," and "it is by intuition that we obtain knowledge of the mind" These may seem hard and dark sayings to those brought up on Bain and to those who refer the psychical life to cerebral activities They may perhaps find partial consolation in Bergson's concession "that although the psychical life in itself may be altogether distinct from the cerebral processes, it is upon the brain that our adaptation to the immediate situation, our mental equilibrium depends"

The charm of the lecturer, which had fascinated huge fashionable audiences at the Collège de France, won the sympathetic reception of his London audiences The whole trend of the theme was in harmony with the teaching of Arthur Balfour in his philosophical excursions "towards a more idealistic interpretation of the universe," or, as Wundt was forced to admit, in "these ultimate questions of psychology we must appeal to metaphysics for an answer"

Regent's Park, N W 1 W J COLLINS

PARTING OF THE WAYS IN DIET

SIR,—The remarks of Prof V H Mottram under the above heading are very apposite Recently we have seen four cases of scurvy in adults in this hospital and one case of pellagra There can be little doubt that a considerable portion of the population is not getting an adequate vitamin intake now The present policy of allowing foods of high vitamin value to become very expensive, and then fixing their price above what the majority of the population can afford, is certainly not a sound nutritional policy, whatever other merit it may have In this hospital we are at present exploring the possibility of giving capsules containing a concentration of vitamins to all patients admitted here I feel there is every justification for this for the next three months at least, unless there is a rapid change in the country's policy towards the equitable distribution of all protective food-stuffs

Central Middlesex County Hospital H JOULES

"E Y D"

SIR,—You might like to tell your peripatetic correspondent of Nov 9 (p 607) that I think instead of saying "James Bovell," he should have written "Egerton Y Davis" or "E Y D, Jr" Osler himself told me how he wrote articles over that name

New York Academy of Medicine ARCHIBALD MALLOCH

*_** Our correspondent writes "Yes, I was wrong and was thinking of 'E Y D,' but being in the North Sea couldn't look it up Somewhere in Harvey Cushing's 'Life of Osler' is a picture of an agenda paper on which Osler had written 'James Bovell' about 30 times He was, of course, one of Osler's early inspirers, an enthusiast who forgot all about his patients when playing with his microscope I suppose Osler helped himself to get out of a dull meeting and go back to his golden days by scribbling thus, but that's a very different thing to having a double on whom to heap one's sins" The convenience of "E Y D" (Y stands for Yorick) to Osler was that after his indiscretions he could be safely put out of the way Osler wrote in a preface to one of these pseudonymous papers " he (E Y D) was drowned in the Lachine rapids in 1884, and the body was never recovered "—ED L

MEDICAL SERVICE IN CHINA

SIR,—It is hoped to send a fully equipped ambulance convoy of some fifty or sixty members of the Friends Ambulance Unit to Central China as soon as possible, and the Foreign Office has approved of the expedition A number of doctors will be required and it is hoped that the convoy will comprise a mobile operating team Qualified men of British nationality who would like to join the convoy should apply to me

ANDREW MORLAND,
Chairman of the Medical Subcommittee,
135, Harley Street, W 1 Friends Ambulance Unit

CHILLY SWEEPER

SIR,—I agree with Dr Clifford Allen—there is something wrong, and not only in Harley Street On the main road in my own district I recently observed as I was passing by on the other side, a man lying half dead with his clothes stripped off his back He had obviously been attacked and seriously injured, and he was suffering gravely from wounds, shock and exposure Surely there is some way of seeing that poor unfortunates like this should get some attention, instead of being left to die on the road? Something ought to be done by somebody

Jericho ADAM LEVITE

Parliament

IN spite of a general desire to make as speedy progress as possible with the War Damage Bill, the most important measure of the present session, the House of Commons found time to give a whole day last week to the consideration of a select committee's report on the conduct of one of its own members, and to a debate on the action of the Home Secretary in suppressing two newspapers The arraignment of Mr Boothby, who has taken a prominent part in the political arena for a number of years, and who had just placed his feet firmly on the ladder of advancement by his appointment as parliamentary secretary to the Ministry of Food, was a task for which neither the Prime Minister nor the House as a whole had any relish But in view of the verdict of the select committee, arrived at after the most searching inquiry, there was no alternative Mr Boothby was allowed the fullest opportunity to give his reasons why he dissented from the select committee's findings and then the curtain was rung down as quickly as may be on an incident which all members of the House will try to forget Mr Herbert Morrison found it fairly easy to dispose of the attack made on him by a very small group of members for suppressing the Communist journals, the *Daily Worker* and the *Week* Normally the present Home Secretary would have been the first himself to challenge any attempt to interfere with the freedom of the press, but he had no difficulty in proving that the times are not normal, and that these two newspapers by their persistent attempt to obstruct our war effort had left him no option but to stop their publication The majority—323 votes to 6—by which the opposing motion was negatived demonstrated the overwhelming support in all quarters of the House for the repression of anything which imperils our war effort The remainder of the week's sittings of the House of Commons were taken up by a detailed examination in committee of the earlier clauses of the War Damage Bill The House is passionately anxious that the bill when it becomes an act shall really bring a substantial measure of help to those whose property has been bombed, and particularly to the small house-owner In practice however this is not at all easy, and as the debate has proceeded a fear has been growing that injustice and hardship may result from the decisions of the War Damage Commission The Chancellor of the Exchequer frankly admitted the difficulties and complications of the position, but assured the House that the desire of the Government is to do the fair thing

QUESTION TIME

Medical Prisoners of War

Prof D L SAVORY asked the Secretary of State for Wa what steps were being taken to facilitate the repatriation o medical officers serving in His Majesty's forces, and no captives in Germany —Captain H D R MARGESSON replied The German government have been informed that Hi Majesty's Government are ready to repatriate the Germa medical personnel who are entitled to repatriation under th Geneva Convention of 1929, if the German government wi also conform to the terms of the convention as regards Britis medical personnel in their hands The matter is being activel pursued, but a satisfactory settlement has not yet been reached

Artificial Shortage of Doctors

SIR FRANCIS FREMANTLE asked the Minister if he woul consider the seconding of medical officers from the Army, wit arrangements for their instant recall in case of need, to relie the excessive demands made on medical practitioners by th work on serums, vaccines and toxins was written in collaboration with Professor Eyre, who pays tribute to the spadework which Bosanquet never spared to ensure meticulous accuracy in his premises, a feature of which his easy polished writing gave little hint In 1937 he published "Meditatio Medici," a book informed with his wide culture and tolerance

He died on Jan 24, at the age of seventy-four During the last few weeks of a distressing illness nothing was more in evidence than his innate gentleness and courtesy, which seemed to show themselves more and more as his bodily strength grew weaker Indifferent to his own feelings and to the consciousness of failing powers, he thought only of those around him and of how he could still be to them the kindly and gracious host that he always was

R A Y writes Bosanquet did not seek popular acclaim, or strive after financial success He brought a keen and critical acumen to the study of disease, which was almost too exacting for the mutable criteria of modern medical science He had an absolute conception of right and wrong He would sacrifice his own interests where he felt by making such a protest he could achieve what he regarded as correct and rectify a seeming injustice It was perhaps a misfortune that he eventually turned to clinical medicine rather than to its experimental and laboratory problems He was a philosopher, a thinker and a student rather than a profound clinician It was probably because his sympathies were great and his kindness of heart impelling that he was attracted to the study and treatment of the sick patient With such a character, it can easily be recognised that he was a loyal colleague and a source of strength to any hospital committee His double first at Oxford in literæ humaniores was apparent in his conversation and in all he wrote, for his words were well chosen and apposite He was a wit in every sense of the word—quick incisive and even caustic in repartee on occasion—but he was never unkind His most severe mot would be delivered slowly and with a disarming smile, which left no possible sting I remember in the last war we both had house-physicians of far Eastern origin In comparing notes, Bosanquet told me he thought that he and his house-physician esteemed each other, but did not always quite understand one another's English

ELIZABETH HURDON

CBE, MD TORONTO, FACS

IN 1925 the London Association of the Medical Women's Federation decided to develop a scheme of controlled research in the treatment of uterine cancer by radium at four hospitals staffed by women and Dr Hurdon was appointed as director to coordinate methods and to analyse and record results In 1929 the four clinics were fused into one unit and the Marie Curie Hospital was founded at Hampstead Under Dr Hurdon's direction the results achieved there, first with radium alone and later with X rays were, in the words of Dr Henri Coutard, among the best in the world

Elizabeth Hurdon was born at Bodmin, the daughter of John and Anne Coom Hurdon, and she died at Exeter on Jan 29 She went to school in Canada and qualified in medicine from the University of Toronto in 1895 She went at once to Baltimore where a post at an evening clinic for working women was awaiting her This job paid her living expenses and left her free for what she really wanted—postgraduate work in the pathology department of the Johns Hopkins, under W H Welch But soon H A Kelly, head of the department of gynæcology, offered her a more regular appointment at the hospital and she was able to give up her outside work After three years she was officially recognised by the university and became an assistant and later associate in the department of gynæcology She obtained her F A C S in 1913 In 1916 she was granted leave of absence and volunteered for service with the R A M C She served in Malta and Salonika where she was at one time in charge of the dysentery camp of the 63rd General Hospital She was demobilised in 1919 and returned to the Johns Hopkins where her post had been kept open for her But family affairs forced her to resign the following year and return to this country, where for five years she led what she deprecatingly called the life of a lady of leisure Without a hospital appointment there did not then seem to be any opening for a gynæcological surgeon, and though in an emergency she went to the University of Liverpool as a temporary lecturer in pathology she did not find in general pathology the proper outlet for her powers The Marie Curie scheme gave her the opportunity she was seeking, and after a round of visits to pioneer centres of radium therapy she began her new work She retired in 1938 and was awarded the C B E in the same year Her all too brief retirement was filled with travel and gardening

The portrait is from the cover of the *Medical Women's Journal* (Cincinnati) for September, 1936

THOMAS JAMES MORTON

M B CAMB , SURGEON LIEUTENANT, R N V R

Dr Morton was killed last month in a dive-bombing attack on a cruiser in the Mediterranean He was 29 years of age and the only son of Dr John Leyden Morton and grandson of Dr Thomas Morton, who both practised in West Hampstead He was educated at St Peter's School Seaford, at Marlborough College, and at Clare College, Cambridge He obtained an entrance scholarship to Charing Cross Hospital and took his conjoint qualification in 1936 The same year he also graduated M B Camb He was house-physician to Dr Gordon Holmes and house-surgeon to Mr Norman Lake He was appointed medical officer to the Hull and Sculcoates Dispensary and he held this post until he was called up for service with the R N V R shortly before the outbreak of war He married Miss Patricia Smith of Hessle, near Hull

Barrie Edinburgh

THOMAS VINCENT DICKINSON

M D LOND , M R C P

Dr Vincent Dickinson who died in London on Jan 21 in his 83rd year, was the son of Dr Thomas Dickinson who practised in Chelsea He was educated at King's College and St George's Hospital from which he qualified in 1879, taking high honours later at the London M B and M D After spending some years in house appointments he got on the staff of the Chelsea Hospital for Women and settled in the neighbourhood of Sloan Square, where he remained throughout his life Of a quiet retiring disposition he was a man of wide interests and deep sympathies, which soon became apparent to those who were privileged to know him For many years he was associated with the Italian Hospital in London , his knowledge of Italian caused him to take an active part in the development of cultural relations with Italians resident in London and he was one of the leading spirits who made the Anglo-Italian Literary Society a common meeting ground for Italians and British lovers of Italy For his services to Italians during the last war he received special mention and was made commander of the Order of the Crown of Italy Medieval medicine had a fascination for him and he also took an interest in City life, past and present He was master of the Apothecaries' Company in 1925–26 One of the outstanding events of his term of office occurred when, accompanied by the wardens he attended at St James's Palace to confer upon the Prince of Wales, afterwards King Edward VIII, the honorary diploma of the society —the highest honour which the Society of Apothecaries can confer A detailed description of the society's armorial bearings also came from his pen In 1892 he married Beatrice, daughter of Captain S H Evens, Royal Fusiliers, who survives him with a son and daughter

Obituary

PENDRILL CHARLES VARRIER-JONES

KT , M A CAMB , F R C P

Sir Pendrill Varrier-Jones, director of Papworth Village Settlement, died from a heart attack on Jan 30 within a fortnight of the silver jubilee of the foundation of the colony which he started at Bourn and later moved to Papworth Papworth was his life's work, but he was always seeking new activities and at the time of his death he was planning to add teaching to his other work Only an hour or two before his death he wrote a long letter to Sir Walter Langdon-Brown enthusiastically describing his new scheme He wanted to hold a course at Papworth on the diagnosis and treatment of tuberculosis in which special attention would be given to the sociological and economic aspects of the disease He had drafted an announcement of the course to appear in our columns We can hope that the scheme may still fructify as a memorial to a pioneer in the restitution of the tuberculous to independence

Varrier-Jones was born at Troedyrhiw, Glamorgan, the son of Dr Charles Morgan Jones, and he was a Celt, with *all the Celt's fire and imagination* and with the long black hair and gestures of an impresario He was commonly known as the Pendragon, and this *nick-name* later became the trademark of the Papworth *goods* He was educated at Epsom College and St John's College, Cambridge, where he was a foundation scholar and prizeman He obtained a first in the natural sciences tripos in 1905 and qualified from St Bartholomew's Hospital in 1910 While acting as a temporary tuberculosis officer for Cambridgeshire in 1914 he was impressed with the futility of advising the tuberculous workman to find a light job in the open air and eat good nourishing food As Kingston Fowler was later to say, " a working man has no time to be an early case of pulmonary tuberculosis " Varrier-Jones's reaction was to start his village settlement and among his supporters in the early days when help was most urgent were Clifford Allbutt, Sims Woodhead whose name is commemorated in the laboratory at Papworth, and Sir Humphry Rolleston, *who only gave up his chairmanship of the settlement* a few months ago Outside Papworth Varrier-Jones also served the handicapped as chairman of the rehabilitation committee of the International Union against Tuberculosis, as a member of the Central Council for the care of Cripples, and as honorary consulting tuberculosis officer for Cambridgeshire

Of his " great preceptor " Dr J B McDougall, medical director of the British Legion Village at Preston Hall, has written Few men have accomplished so much in so short a time In twenty-five years Varrier-Jones saw the birth, growth and development of a scheme which bridged the gap between medicine and industry in a way which was original in conception and successful in practice The Papworth " experiment " has long passed the experimental stage and has been emulated with more or less success in this and other countries, but with very few exceptions the results have never been comparable to those which Varrier-Jones achieved in the place which he himself created There was never any doubt that his administrative abilities exceeded his clinical accomplishments, though it can never be said *that Papworth failed to concentrate on research and on* modern methods of treatment But he had himself little time left for the detailed work which clinical examinations and research work involve That he succeeded *in creating a large sanatorium and industries* was in itself a tremendous task, but that he was able to obtain the capital which made his extensions possible year by year singled him out as a great figure in medical socio-economics I know well the strain which this made on him It was his own personality which made Papworth possible and I doubt whether he would have reached the same pinnacle of fame had he been forced to administer a similar unit under the restrictions and guidance *of any local authority From the inception* of the small settlement at Bourn, he remained in supreme control, dictating policy to the minutest detail He threw himself into the ramifications of the various industrial departments with the ease of a master of industry, and was quick to detect the markets which were waiting for the products of disabled men and women In his position of isolation as the leader of a new conception in medicine he had little time for committees, conferences and the like In addition to Papworth he was called upon at different times to advise and organise new *schemes in other parts of the country*—at Enham, where he built up successful markets for the industries run by patients suffering from nervous diseases , at Peamount Sanatorium, Dublin, where a promising settlement was set going some ten years ago , and at Preston Hall where he reorganised the institution at a time when the British Legion assumed administrative control Abroad, his services were in constant demand and I remember visiting with him Claire Vivre, the new settlement in the Dordogne—a scheme which was killed almost at its inception by the intervention of political prejudice After a brief tour of the institution, houses and workshops he suggested that two years should bring the scheme to a conclusion I thought it might last a little longer, but as usual he was right " If only they would pay attention to principles and leave details to look after themselves " was his comment

We have lost a leader in tuberculosis thought and an administrator of superlative ability

WILLIAM CECIL BOSANQUET

D M OXFD, F R C P

Dr Cecil Bosanquet was leisurely and learned His students enjoy remembering his ward rounds , the questions he dropped were never pressed home on the faltering, and the replies, however remarkable, were courteously if quizzically received He never deliberately made anyone look a fool, but he made all feel that medicine was a vast, largely untravelled field, and that perhaps the last word had not been said in the latest textbook after all Students learned from him not facts so much as an attitude to the work they were beginning His consideration for the patient always transcended *the convenience of the teacher* And his aphorisms, punctuated by his gentle sniff, were hugged and carried away, to be repeated round the medical school

Elliott & Fry

He was the son of Admiral G S Bosanquet and was educated at Eton, where he was a King's scholar, and New College Oxford, where he *took a double* first in greats in 1889 He was a fellow of his college from 1890 to 1897, when he took his B M and D M He became F R C P in 1904 He was appointed physician to *Brompton and* Charing Cross Hospitals and physician to the London Lock Hospital and had held a majority in the R A M C (T), from which he had retired He was also consulting physician to the North-West Frontier Force of India, and physician to outpatients at the Victoria Hospital for Children

Bosanquet was *not* gregarious Some of his colleagues worked with him for more than twenty years without learning anything about his personal life, or even knowing where he lived or what he did in his spare time He gave the impression of being a man with a fine brain who had lost his enthusiasms He would tease his colleagues about theirs, and then apologise very kindly and make amends by offering wise and critical advice He was jealous of the good name of Brompton Hospital, and the *Brompton Hospital Reports* which were begun in 1932, were his idea *He became senior* editor and made happy comments in the margins of the galleys submitted to him *When he left the active staff the* lay board of management invited him to join them , he accepted and attended meetings punctiliously He seldom thought a matter worth taking a stand over—his usual attitude was *expressed* in a tolerant shrug—but when he did he was not to be shaken His standards of justice admitted of no compromise

Most of his written work was on underlying principles rather than on *patients and he edited* successfully the thirteenth edition of " Green's Pathology " An early

On Tuesday, Feb 18, at 2 15 P M at the section of comparative medicine of the Royal Society of Medicine Prof T J Bosworth, D V S M, Mr Frederick Blakemore, D V S M, Dr H H Green and Dr M Murray will open a discussion on fluorosis in man and animals At the same meeting Dr Eugene Nassau will read a paper on the culture of tubercle bacilli from laryngeal swabs The section of orthopædics will meet on Saturday, Feb 22, at 11 30 A M, at Bothley's Park War Hospital, Chertsey, Surrey, when Mr W Rowley Bristow will open a discussion on injuries to peripheral nerves On Tuesday, Feb 25, at 2 30 P M, Dr C P Symonds will deliver his postponed presidential address to the section of psychiatry He will speak on the neurological approach to mental disorder

The Davyhulme Military Hospital Medical Society held its inaugural meeting on Jan 30 when Major R W Fairbrother read a paper on cerebrospinal meningitis The object of the society is to encourage medical men and women in all the services (including civilian) to meet together to discuss problems of common interest and membership is open to any medical man or woman in the area The next meeting will be held at the hospital on Thursday, Feb 13, at 3 P M when Lieut Colonel W E Underwood will read a paper on gunshot wounds in the field Further information may be had from the hon secretary, Major William Brockbank, Military Hospital, Davyhulme, Nr Manchester

Births, Marriages and Deaths

BIRTHS

DOBBIN —On Jan 31, at Crondall, Hampshire the wife of Dr Leonard Dobbin—a son

HALLAM —On Jan 29, at Reigate, the wife of Dr H N Hallam—a son

LYSAGHT —On Jan 30, at Bridgend, Glam, the wife of Mr A C Lysaght F R C S —a son

PATERSON —On Jan 24 at Kingston Ontario, the wife of Captain John F Patterson R C A M C, of Little Baddow, Essex—a son

MARRIAGES

BISSET—ALEXANDER —On Jan 23 at Perth, George Maxwell Fraser Bisset, M B to Arlette Myrtil Alexander

BONE—MACLEOD —On Feb 1 at Ealing, Alan W Bone F R C S, younger son of Dr J W Bone, to Sheila Margaret MacLeod

KERSHAW—COWELL —On Jan 23, at Bramhall William Edgar Kershaw, M B Manc, Surgeon Lieutenant R N V R, to Maureen Alexa Clayton Cowell

MOYNAGH—MARTIN HARVEY —On Feb 1 at Beckenham Kent, Kenneth Desmond Moynagh M R C S, Captain R A M C, to Drusilla Wendy Martin Harvey

DEATHS

ACKERY —On Jan 29, Edward Faulknor Ackery M R C S late medical registrar Royal Dental Hospital London aged 65

ARMSTRONG —In January, by enemy action Keridwen St Valentine Armstrong, M D Lond, wife of Dr J V Armstrong

CHAPMAN —On Jan 31 at King's Somborne Charles William Chapman, M D Durh M R C P late of Wimpole St aged 97

DUN —On Jan 31, at Shrewsbury, Robert Craig Dun, M B Edin, F R C S late of Liverpool

EVANS —On Feb 2 at Herne Bay, Robert Cecil Turle Evans, M B Lond, aged 69

FORREST —On Jan 28 at West Manse, Auchterarder, Robert Sibbald Forrest, M B Edin aged 76

GORDON —On Feb 2, at Bedford Edward Gordon, M C, M B Aberd

HURDON —On Jan 29, at Rockleigh, Exeter, Elizabeth Hurdon C B.E., M.D Toronto, F A C S

MCFADYEAN —On Feb 1 at Hindhead, Sir John McFadyean, M B Edin, M R C V S, aged 87

MEAD —On Jan 28 M Theophilus William Mead, M R C S, of Portsmouth

PRATT —On Feb 4, Edward Frederick Pratt, M B Durh, of Lansdowne House Berkeley Square W aged 74

REES —On Jan 29, at Swanage, William Arthur Rees M D Lond, F R C S

ROBINSON —On Jan 29, at Worthing, Florence Ada Robinson, L R.C.P E

SPROTT —On Jan 29, Andrew Sprott M B Glasg, of Appleby, aged 74 years

VARRIER JONES —On Jan 30 at Papworth Hall Cambridge Sir Pendrill Varrier Jones M A Camb F R C P

Appointments

CROSS A G M B Camb F R C S hon consulting ophthalmic surgeon to the Wimbledon Hospital

DAVIDSON A. H M D Dubl, F R C P I visiting gynæcologist to the Royal City of Dublin Hospital

GARLAND ANDERSON M D Lond, M R C P D P H asst M O H for Lincoln

GRAY, T, G M B St And R S O at Blackburn Royal Infirmary

HAMILTON ALISON M M B Edin D P H asst pathologist at the Royal Infirmary Sunderland

Notes, Comments and Abstracts

MIGRATION OF INSURED PATIENTS

IMMEDIATELY before the outbreak of war the Ministry of Health issued a circular to all insurance committees, pointing out that some latitude would have to be allowed as regards the maximum number of insured persons permissible on practitioners' lists The minister approved an addition of 500 to the prescribed maxima In the 16 months which have passed since then the demands of the military authorities for practitioners have become more and more clamant The London Insurance Committee has been particularly affected and have appealed to the Central Medical War Committee to avoid calling up practitioners from districts which have been particularly affected by aerial attack The C M W C realise that London's new health problems make a special demand on practitioners and say that in balancing the conflicting demands of the civilian service and of the military authorities the insurance committee's point of view will be borne in mind But it has been suggested that, in view of the number of persons being evacuated from London, it should not be difficult to release insurance practitioners for military service, and that since they have lost many private patients they could doubtless assume responsibility for additional numbers of insured patients Some evacuees, however, return to their home districts within a short time The panel lists of doctors in the evacuation areas are therefore misleading, because some of their patients who have been officially transferred to provincial doctors have returned to town, while others, living in reception areas have not troubled to remove their names from their town doctor's list Thus the names on the lists of doctors in evacuation areas are in excess of the number of patients likely to call them in There is little danger, therefore, that these doctors will be overworked if they are permitted to take on patients in excess of the normal maximum

Another difficulty arises out of the release of assistants, particularly where the practice is capable of being administered under the protection of practices scheme If a principal has been allowed to accept say, 1000 extra patients by virtue of his employing a permanent assistant, he cannot obtain relief under the scheme if the assistant is called up If the principal himself is called up the practice can come under the scheme and the assistant can become an acting practitioner and accept such of the principal's patients as apply to him for treatment It is becoming increasingly difficult to obtain assistants, particularly in areas susceptible to aerial attack, and the London committee feel that they will shortly have to ask for a further relaxation of the limit placed upon the number of insured patients for whom a practitioner may assume responsibility They think, too, that where an assistant is called up and the principal is unable to obtain the services of another assistant arrangements might be made for other local practitioners to agree to give help so that the principal can retain his full list of patients This arrangement would have to be administered with caution so that it did not offer an excuse for principals to dispense with the services of their assistants while expecting to retain a list in excess of the permitted maximum Meanwhile the London committee have applied in three or four cases for special maxima to be allowed to practitioners in the affected areas

PAGET TELLS HOW HE DISCOVERED TRICHINELLA

IN Stephen Paget's memoir of his father is an account in Sir James Paget's own words of his discovery in 1835 of the *Trichina spiralis* during his first year in the dissecting room at Bart's My share, he writes, was the detection of the "worm" in its capsule, and I may justly ascribe it to the habit of looking-out, and observing, and wishing to find new things which I had acquired in my previous studies of botany All the men in the dissecting-rooms, teachers included, "saw" the little specks in the muscles, but I believe that I alone "looked-at" them and "observed" them no-one trained in natural history could have failed to do so The discovery, he goes on, had a memorable consequence,

ALEXANDER LEWIS McMILLAN

M D GLASG

Dr A Lewis McMillan who died at Bridge of Weir on Jan 21 graduated at Glasgow University in 1887 He took his M D two years later and started to practise in Newton-on-Ayr, but he soon returned to Glasgow where he practised for nearly fifty years He early became interested in ophthalmic surgery and in 1892 was appointed assistant to Freeland Fergus at the Glasgow Eye Infirmary This was the beginning of a long association with that institution which lasted until he retired from the post of surgeon in 1918 In 1921 he became visiting oculist to the Glasgow fever hospitals and from 1927 till his retirement from medical practice in 1937 he was attached to the Glasgow public health department in connexion with pensions for the blind He maintained a close interest in the affairs of the Lansdowne Church and did much benevolent work in a quiet and unostentatious way His wife died some years ago but he is survived by two sons and three daughters

Medical News

Royal College of Physicians of London

At a comitia of the college held on Jan 30, with Sir Robert Hutchison, the president, in the chair, the following representatives of the college were elected Sir Charles Wilson, Dr H L Tidy, Prof J A Ryle and Prof H P Himsworth on the British Medical Association Medical Planning Commission, Dr A Feiling on the council of the Queen's Institute of District Nursing, Dr Stanley Barnes on the court of governors of the University of Birmingham, Dr P Hamill on the advisory committee of the Ministry of Health to compile a war emergency formulary Dr W E Lloyd was appointed an examiner in pathology and Dr G Roche Lynch was appointed an examiner in public health

The following candidates, having satisfied the censors' board, were admitted to the membership —

J B Arthur M B Edin , J D Ball, M B Lond , T E D Beavan, M B Birm , A J Bernfield, M B Lond , Stanford Cade, F R C S , W E Clarke, M B Lond , Constance E Field, M D Lond , M O J Gibson, M B Camb A G Heppleston, M B Manc H M James, M B Camb , R B Magill, M B Belf , R H Mole, M B Oxf , N V Nene, M B Bombay , Elizabeth H Rosenberg M B Lond , Gerard Sanderson, M B Lpool S P Sinha, M B Patna G R Steed M D Lond , C H C Upjohn, M B Camb , C K J Vautier, M B N Z , Celia K Westropp, M B Oxf

Licences to practise were granted to 177 candidates (155 men and 22 women) who have passed the final examinations of the conjoint board and complied with the by laws of the college The following are the names of the successful candidates —

J P Adlam, Bennie Alexander A J C Allen G J Amiel, A W Anderson C M Arango, Alfred Arnstein, M W Arthurton, Walter Aspinall, Islay C Barne, Jack Barrow, D H Bennett, F A Binks, Andrew Bogdanovitch Claude Brun, J M Burbury, C R K Carroll, D I Chapman, H R Claff, Lionel Cohen, Brenda Collar, C W Coplans J A B Cotsell, W R Cyrlas Williams J H Dadds, E B Dawe Joseph Denfield G D Denlow, A G Doughty, C E Drew Margaret D D Dudley Brown, C T F Ealand, W K Earle, H H G Eastcott, Christine Ecroyd, E M Ensor, E G Essery Joan Fitzherbert B J Fowler, A J Fraser Simson, S M Frazer, Franz Freund, P D Gange, O F Garai, Leo Garland Collins, A J Gaskell, J E Gilbert R A Gill, B M Girgis Gerald Godfrey, A H F Gow, C N Grainger, J C Gray, J L Greaves, Barbara J Greenwood, C H Greer, A G Gregory, E W Guillaume J W P Gummer, A W Hagger, F A H Hall, Winefride M Hamilton, G P Hartigan, P L M Hartley, M C Head E H Hemsted, G G Henn Maurice Hershman J H Hicks, A C Higgitt, G de B Hinde, J C Holman Emily M Horsfall E W Hyde N N Iovetz Tereshchenko, J D James, Elizabeth E Johnson, A C V Jones, H W Jones, H P Jones, H O Jones, R D Jordan, H L Joyce Henry Kanter Marie D Kelleher, R E Kelly, E R Keyworth, J H Kirkham S H Kutar, R U F Kynaston, Bernard Lewis, D W Liddell, Isabelle G Little R R H Lovell, N W R Lucas, Silvia C Lucas, W C Lyon G E McFall, W E Mahon, Jankinath Manhas F R C Manning, L W C Massey, T R Maurice, Joyce B M Mayes F B Meade V C Medvei, Joan S Millett, A F Mohun, R A R Montgomery J V Morris, Madeleine B Morris, J H M Munro, Smarn Muntarbhorn, T A Narayanan L P A Newborne, D J O Brien, William O'Brien, C B O'Carroll, E E Oddie F H Packer, R H A Parker, C N Partington A J Patenall G H Pearson Rosa M Piggot, Louis Portelli, F T G Prunty, S D Purcell, Harold Reeback, H N Reed, P A Rees R L Rees, R E Renaud, G K C Rettie, R E Rewell, Florence C R Richardson Kathleen P Richardson, M J Riddell E F Ridley, Ronald Robins Browne, G K T Roche, J A J Sandilands, Witold Schey Isabel B Schooling, C M Shafto, R G Sheppard, J C Smith, R J Stanley, R B Stark, Tobias Sternberg, J N Stirling H A W Stormont, R J Stout, F G Strong, P N Swift, J M Swithinbank M R Thompson, D N Thornton, Robert Tilley, St J M A Tolhurst Samuel Tomback, Eileen D Trafford, Ruth D Usher, P C van der Westhuizen, A S Veeder, T H E Verdon G B R Walker, F J H Walters, W R Watson, S D V Weller, B W Wells Moyr Welply Hermon Whittaker R D Wilkins, R J G Williams A R H Williamson, J B Wyman

Diplomas were granted jointly with the Royal College o Surgeons, to the following candidates —

D P H —G P Charles Gwendoline M Edwards, Joan M Faulkner, Samuel Leff, I B Sen Gupta

D M R —Benjamin Jolles, J H Wilding

Diplomas in anæsthetics and in laryngology and otolog were also granted to the candidates named in the report of th meeting of the Royal College of Surgeons in our issue of Dec 21, and in psychological medicine to those named in our issu of Jan 18

University of London

At recent examinations the following were successful —

DIPLOMA IN CLINICAL PATHOLOGY

A R Aidin, J W Clegg, J T Quinlan, Gaya Prasad, J E Stritch, Frieda Young

University of Oxford

Lord Nuffield has given £25,000 to the university t encourage research in ophthalmology The money is to b used to appoint a research assistant to the Margaret Ogilv reader in ophthalmology

Radium Gift from America

Two centres for the supply of radon are working in th country, but the supply still falls far short of the deman When this was made known to the British War Relief Societ in New York, through its British representative, £5000 wa speedily cabled to London to remedy the deficiency T give effect to the gift at the earliest possible moment th British Hospitals Association approached the Middlese Hospital, which consented to start and administer anoth centre for the supply of radon, and work has already begu on it

Health of the Student

At the annual convention of the Scottish National Unic of Students in Aberdeen the recommendation of its medic office to set up a student health insurance scheme wa adopted The medical office urged the establishment routine medical inspection for students and the formation a small medical panel in university towns Younger teache whose interest in students' welfare was known would compo the panel of advisors, and students could choose their ow doctor by registering with the local students' representati council and paying a fee of 10*s* or £1 Dr J H F Brothe ston, director of the medical office, said that already medic inspection at certain of the universities had found man unsuspected cases of tuberculosis and one or two of diabet and nephritis

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Since the publication of the last list of subscriptions to th Medical War Relief Fund, £1700 has been received, bringin the total to over £16,000

Colonel Walter Elliot, sometime Minister of Health, ha been appointed director of public relations at the War Office i succession to Major General J H Beith

A meeting of the Paddington Medical Society will be hel at 3 P M on Tuesday, Feb 11, at the new tuberculos dispensary, 14, Newton Road, W 2, when Dr Alexand Baldie will open a discussion on the medical aspect of civili morale and crime in war time

In recent casualties lists the following deaths are announce Major J S McMillan, I M S , Captain G C Retz, M B Dub I M S , Lieutenant F C McLaren, M B Glas , R A M It is also announced that Probationary Temp Surge Lieutenant C L Pretre, M R C S , R N V R , of H M *Acheron* is missing, presumed killed

The Minister of Labour and National Service remin employers that the regulations prescribing standards lighting in certain factories came into force on Feb 1 T new regulations (see THE LANCET, 1940, 2, 573) are based the fifth report of the Departmental Committee on Lightin in Factories

In view of the number of nursing matters which co under the control of the Ministry of Health in war time, a to prepare for postwar developments, the Royal College urging the Minister of Health to establish a division nursing within the ministry, which would be administer and staffed by suitably trained and experienced nurses

ORIGINAL ARTICLES

DEVELOPMENT OF PROVINCIAL MEDICAL EDUCATION ILLUSTRATED IN THE LIFE AND WORK OF

CHARLES WHITE OF MANCHESTER *

By Arthur H Burgess, MB MSc Manc, LLD, FRCS, FACS

CONSULTING SURGEON, MANCHESTER ROYAL INFIRMARY AND CHRISTIE HOSPITAL, PROFESSOR EMERITUS OF CLINICAL SURGERY IN THE UNIVERSITY OF MANCHESTER

On scrutinising the list of my 80 predecessors I find that I am the first Hunterian orator who is an entirely provincial surgeon—one who has neither received his surgical education in London nor practised his profession there, one as yet untainted with metropolitanism I mention the fact to excuse my action in departing from the custom of making John Hunter the main theme of discourse, today is a provincial's day out, and I am taking as my text the life and work of Hunter's famous contemporary provincial surgeon Charles White of Manchester born in the same year as John Hunter, his fellow-student and life long friend

Charles White, born at Manchester on Oct 4, 1728 was the only son of Dr Thomas White who practised there at King Street, and who had not only acquired a great reputation for skill in midwifery but was actually the first in England to perform cæsarean section Young White received his general education privately, but while little more than a boy he was allowed to assist his father with midwifery cases At the age of twenty, he was sent to London and joined, at the same time as John Hunter, the school of anatomy of William Hunter, John's elder brother He afterwards spent a winter at Edinburgh and rejoined his father in 1751 He agitated so actively for the establishment of an infirmary for Manchester that a prominent local merchant Joseph Bancroft, impressed by White's skill and energy, offered to defray all expenses of an infirmary for one year if he would give his professional services thereat A house was taken—No 10, Garden Street, Shudehill—and on June 24, 1752, was opened with 12 beds This proved so successful that larger premises were soon required and on April 9, 1755, the new Manchester Public Infirmary was opened with 40 beds and a medical staff of 3 physicians and 3 surgeons The infirmary remained on the same site until 1908 when it was removed to its present premises with 649 beds, and an honorary medical staff of 44

Charles White from an engraving

White married, in 1757, Ann, daughter of John Bradshaw of Bradshaw Hall, Shudehill, by whom he had four sons and four daughters Two sons entered the medical profession and assisted their father for a time, but all four predeceased him In 1762 he was elected a fellow of the Royal Society—five years before John and nearly six years before William Hunter received this honour On the same day he received the grand diploma of the Company of Surgeons the body which in 1800 became the Royal College of Surgeons in London and in 1843 the Royal College of Surgeons of England He was one of the founders of the Manchester Literary and Philosophical Society which still flourishes † and for 23 years was its vice-president

Owing to a disagreement with the board of management in 1790 Charles White, after 38 years' service, resigned from the staff of the infirmary along with the rest of his colleagues In the same year he and his son Thomas and two other colleagues founded the Manchester Lying-in Charity, precursor of the present combined St Mary's Hospitals of the city, and he served on its staff for 21 years under the singular title of "man midwife extraordinary" To it he presented his museum of pathological specimens which was unfortunately destroyed by fire in 1847

Sale Priory

White's father in his later years had retired from practice to live at Sale Priory, about six miles from Manchester, and on his death there in 1776 this came into the possession of Charles White who used it as a country residence In 1803 he contracted ophthalmia which destroyed the sight of his left eye Nevertheless he continued to practise and even to operate until a similar attack in 1812 left him totally blind He then retired to Sale Priory where he died on Feb 20, 1813, at the age of 84, and was buried in Ashton-on-Mersey church

WHITE ON PUERPERAL FEVER

White's magnum opus was his "Treatise on the management of Pregnant and Lying-in Women," first published in 1773 He dedicated it to his first medical teacher, Dr William Hunter, then physician extraordinary to Queen Charlotte, "as a small acknowledgment of gratitude for the advantages I received in my education from your instructions, and the kind offices of a friendship with which you have ever since honoured me" The treatise embodied the experience of 27 years of midwifery practice, an experience which had profoundly impressed him with the methods then in vogue Midwifery was almost exclusively confined to ignorant women whose imperfect knowledge of their art had been handed down orally from their predecessors, medical men were called only in cases presenting unusual difficulty White described the prevailing practice in these words

> When the woman is in labour she is often attended by a number of her friends in a small room, with a large fire, which, together with her own pains, throw her into profuse sweats, by the heat of the chamber, and the breath of so many people, the whole air is rendered foul and unfit for respiration . . If the woman's pains are not strong enough, her friends are generally pouring into her large quantities of strong liquors, mixed with warm water, and if her pains are very strong, the same kind of remedy is made use of to support her As soon

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* The Hunterian Oration for 1941 delivered before the Royal College of Surgeons of England on Feb 13

† Since these lines were written the house of the society has been completely destroyed in the Manchester blitz

in procuring me an introduction to Robert Brown. I wanted to examine the entozoon with a microscope, and there was none in the hospital. I thought I might get help from Mr Children, who was then chief of the Natural History Department of the British Museum, and to whom Mr Dawson Turner had given me a letter of introduction. He, however, had no microscope, but suggested that "Robert Brown might help me." So we went at once to the little room in the Museum in which the great botanist was at work among books and specimens, and I remember Mr Children's first question, "Brown, do you know anything about parasitic worms?" and the answer, "No, thank God." But he let me look at my specimens with his little single microscope—the same, I think, that he had done his own grand work with; and I made the sketches of them with which to illustrate the paper read at the Abernethian Society. This, Paget concludes, was certainly the first account given of the new entozoon; but Owen, to whom specimens were taken when I had seen that there was a "worm," read a paper on it at the Zoological Society, and gave it its name. It mattered little; the repute of the discovery would have been of no great use to me, and I should have gained less happiness by disputing it and obtaining it than I have enjoyed in the personal friendship with Owen ever since.

A STANDARD WHOLEMEAL LOAF

THE reinforced flour, with added vitamin B_1 and calcium, is not likely to be on sale for several months, and in the meantime the Ministry of Food are introducing a standard "wholemeal" flour of 85% extraction. It is hoped that this flour will be available almost immediately. The price of the new loaf will be kept the same as that of the present white loaf (8*d* a quartern) by a Government subsidy, and though its adoption will not be compulsory it will no doubt largely take the place of the white loaf. An extraction of 85% of the wheat berry is about the maximum practicable—only certain gritty parts of the bran will have been removed—and the rise from the present 73% extraction of white flour will have repercussions on the alimentary system of at least a few consumers. In the vast constipated majority the change should be for the better, and the relaxed few will still be able to get their white bread.

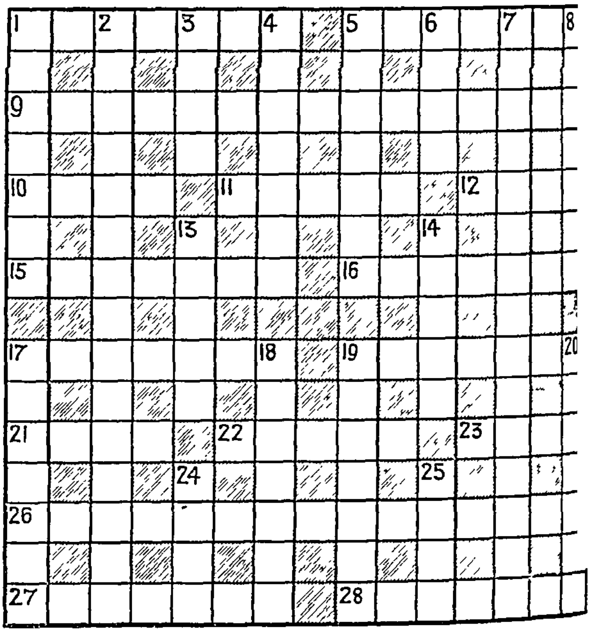
MEDICAL PRACTICE IN RUSSIA

PROBABLY only those unaware of present trends of thought would have been surprised to find the rooms of the Medical Society of London filled to overflowing during a severe daylight air-raid by people eager to hear of the modern developments of medicine in the U S S R. The meeting was organised by the Society for Cultural Relations with the U S S R and was presided over by Mr Somerville Hastings. The discussion was opened by Prof Wood Jones who had had recent experience of refuge centres. His suggestion that reform of medical practice must be an inevitable sequel to those changes in the structure of society that are destined to come about gained rather than lost in cogency by the recent havoc that every member of the audience must have witnessed on his way to the meeting. Dr Lipetz, who had first-hand experience of medical practice in the U S S R, said that the general practitioner there is in no way better equipped to deal with sick humanity than his counterpart in England, but that the conditions under which he works—the absence of hurry, the constant presence of colleagues in the clinics, and the general atmosphere prevailing in them—make him more efficient in preserving national health. Dr Joan McMichael dealt with public health and the prophylactic approach in the U S S R; to many, her facts and statistics were new and surprising. Antenatal care, infant welfare, the rehabilitation of the sick, the whole machinery for ensuring the prevention of disease, made a utopian but documented story. She reverted to a remark of Prof Wood Jones that man was a captive animal for whom captivity had added to, rather than subtracted from, a constant load of fears and anxieties; and she pictured a state of life, well on its way to attainment in Russia, in which the constant anxiety of sickness and all that it means to the wage earner is largely eliminated. Many must have carried from the meeting a wish that medicine here could be practised among a people safeguarded fro cradle to grave by organised preventive medicine.

Droitwich medical committee have asked us to state th reports that it is not possible to get treatment at the spa a incorrect. But accommodation is limited and should engaged well in advance. The St Andrew's brine baths a open and so are the rheumatism hospitals and hostel. I formation can be had from the local spa association.

The Index and title-page to Vol II, 1940, which w completed with the issue of Dec 28, will be ready shortl A copy will be sent gratis to subscribers on receipt a post card addressed to the Manager of THE LANCE 7, Adam Street, Adelphi, W C 2. Subscribers wl have not already indicated their desire to recei indexes regularly as published should do so now.

LANCET CROSSWORD



ACROSS

1 The greater part of a collar bone (7)
5 Not the sort of pipe that gives you cancer of the tongue (7)
9 Not puce in tussis (15)
10 Blood and bones for him, preferably English (4)
11 Mal united fractures may have to be this (5)
12 You get it in Hyde Park or in the neck (4)
15 Schick, of course! (Two words, 3, 4)
16 Not one of Molotoff's bread baskets (7)
17 Not to be thrown at green houses (7)
19 The orthopædist lets off and does his stuff (7)
21 Impulse to action (4)
22 The end of a stroke (5)
23 Fish paddles backwards (4)
26 Poison for the host (Two words, 9, 6)
27 Pupils in a panic (7)
28 Sir Lucius had reactions like this (7)

DOWN

1 I'd follow the company led by the shouting French (7)
2 The proper study of man kind? (15)
3 He himself (as the Latin has it) mixed these pies (4)
4 "This brilliant and versa tile genius Antoine —— Lavoisier" (7)
5 Fusses up like so many spaniels (7)
6 Gee! it gives you an ache in 16 (4)
7 Observed beside the bed (Two words, 8 7)
8 Deep to (7)
13 Ocean liquor? Or you can have it dried (5)
14 Tract or tractor (5)
18 Blowing up for trouble (Two words, 3, 4)
19 Noted for his flask (7)
20 Weir Mitchell treatment i this reversed (7)
24 Gynæcological contrivance not necessarily for the wilderness (4)
25 Some call it Escherichia now, but for most of us it just the same old *B* —— (4)

LAST WEEK'S SOLUTION

G	R	A	N	U	L	E	S	▨	I	N	G	E	S	T
O	▨	D	▨	L	▨	V	▨	▨	▨	E	▨	D	▨	A
I	N	D	U	C	T	O	R	▨	S	P	R	E	A	D
T	▨	I	▨	E	▨	K	▨	A	▨	H	▨	N	▨	P
R	E	C	O	R	D	E	R	S	▨	R	E	T	R	O
E	▨	T	▨	▨	▨	▨	▨	T	▨	I	▨	A	▨	L
▨	▨	▨	P	O	T	A	S	H	▨	T	I	T	R	E
N	▨	P	▨	B	▨	L	▨	M	▨	I	▨	E	▨	S
E	R	U	P	T	▨	B	R	A	S	S	Y	▨	▨	▨
C	▨	N	▨	U	▨	I	▨	▨	▨	▨	▨	A	▨	A
R	E	C	U	R	▨	N	E	M	A	T	O	D	E	S
O	▨	T	▨	A	▨	O	▨	O	▨	A	▨	D	▨	C
T	R	U	E	T	A	▨	F	R	A	C	T	U	R	E
I	▨	A	▨	O	▨	▨	▨	O	▨	H	▨	C	▨	N
C	E	L	E	R	Y	▨	I	N	V	E	S	T	E	D

conducted autopsies on all their fatal cases In 1847 a colleague of Klein's who had been accidentally pricked while making a medicolegal autopsy died of blood-poisoning, and Semmelweis, who attended the post-mortem upon him, was struck by the identity of the appearances disclosed with those in death from puerperal fever He thereupon concluded that the latter must be caused by the conveyance of cadaveric material, adhering to the hands of the students, to the lying-in woman during vaginal examination Consequently, he instructed all students attending the first division to avoid contact with any cadaveric material prior to their daily attendance to scrub their hands thoroughly with soap and water and to soak them in a solution of chlorine before and after every examination of a patient. This practice resulted in a fall of the death-rate of the first division from 11 4% during 1846 to 1 28% in 1848 Semmelweis then promulgated the doctrine that puerperal fever is caused by the conveyance to the lying-in woman of particles of cadaveric material through the agency of the examining finger At that date he apparently considered this the only cause and took none of the precautions adopted by British obstetricians since the time of White In 1847, however two consecutive outbreaks of puerperal fever were traced to the handling of foul discharges from two patients with a cancer of the cervix and a suppurating knee respectively. Semmelweis thereupon added the doctrine that puerperal fever might be conveyed by putrid particles derived from living persons, either on the examining finger or through air fouled with their emanations Disgusted with the opposition of his chief, Professor Klein, and others of his colleagues, he left Vienna in 1851 o return to his native city of Buda-Pest, and it was not ntil 1856, after he had been appointed professor of idwifery there, that he came to appreciate the importnce of clean linen and clean dressings He noticed that he sheets "actually stank" with decomposed blood nd lochia In 1857–58 of 449 confinements 18 died of uerperal fever, and early in 1858 10 died thereof in a ingle day, although throughout this period chlorine lisinfection of the examining hand was scrupulously nforced Because of these experiences Semmelweis in 861 added to his previous declarations the statement hat puerperal fever may be conveyed to the lying-in voman by foul bed-clothes dressings and sponges, and by the hands of midwives and nurses He later stated that a puerperal woman may infect herself owing to the retention within the birth-tract of material which has undergone decomposition, that instrumental injuries of the genital passages may produce puerperal fever by self-infection, that free ventilation of lying-in wards is necessary to carry away exhalations from patients, and that an infected puerpera should be promptly isolated

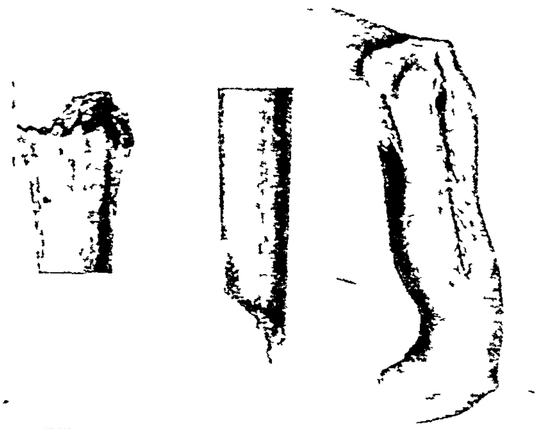
Thus by successive stages spread over several years Semmelweis at last arrived at the identical views and practice advocated by Charles White over 75 years previously The only factor not specifically mentioned by White, and to which Semmelweis had some claim to originality, was the fatal role played by the examining finger fouled by contact with decomposing cadaveric material In White's day Manchester had no medical school and, therefore, no medical students to handle and convey cadaveric particles to the lying-in woman. The claim made by continental writers that our knowledge of the prevention and treatment of puerperal sepsis originated with Semmelweis ignores the whole of the pioneer labours of White and of British obstetricians—work carried out long before Semmelweis's birth All honour to Semmelweis for his courageous advocacy, in face of strong opposition, of measures to diminish the appalling risks of childbirth in his day, but the glory of the pioneer must be awarded to Charles White

PHLEGMASIA ALBA DOLENS

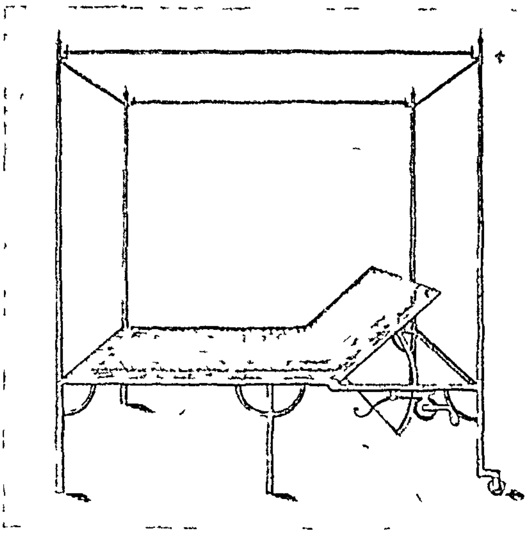
In 1784 White published "An Inquiry into the nature and cause of that swelling in one or both of the lower extremities which sometimes happens to lying-in women," but gave no title to this condition either then or in a second edition which appeared in 1792 Dr John Hull (1800) gave to it the name phlegmatia dolens White, in 1801, enlarged this title into phlegmasia alba dolens puerperarum He described fully its symptoms, course and treatment, and expressed an original opinion of its pathology, attributing it to an obstruction of the lymphatic trunks where they enter the pelvis under Poupart's ligament White considered that compression by the fœtal head of some of the main lymphatic trunks led to their rupture as they passed over the pubic portion of the pelvic brim, and that the cicatrisation following healing of the ruptured lymphatics resulted in their obstruction with consequent swelling of the limb below until such time as an effective collateral circulation became established for this weeks and sometimes months were requisite but, once developed, such a lymphatic by-pass must necessarily prevent a repetition of the trouble in the same limb.

WHITE AS A SURGEON

Not only was White a pioneer in certain aspects of midwifery, but he was also a most original surgeon, and read many papers on surgical topics before the Royal Society From the historical outlook, the most interesting of these and one for which he has since been referred to frequently but erroneously as the first surgeon to excise the shoulder-joint for disease, concerned a boy of 14, of scrofulous habit who was admitted to the Manchester Infirmary in 1768 (White 1770a) A fortnight previously he had been seized with acute inflammation in the left shoulder culminating in a large abscess which had been incised on the inner side of the arm shortly before admission Through this opening the upper end of the humerus was felt to be quite bare and from it escaped a profuse and offensive discharge Though the usual practice for such a condition at that time was amputation White, eight days after admission, exposed the bared portion of the humerus through an external incision , pushing the elbow strongly upwards, he forced the upper part of the bone completely out of the wound and sawed off two inches with an ordinary amputating saw The discharge rapidly diminished, swelling of the limb abated, all hectic symptoms subsided After two months a large sequestrum was removed and the wound healed rapidly, the ultimate result being that, although over four inches of the shaft had been lost either through removal at operation or by subsequent sequestration, yet the arm was but one inch shorter than its fellow, and all movements of the shoulder were completely restored This result exceeded White's most sanguine expectations , believing, as he did, that he had excised the head of the humerus together with the upper part of the shaft, he was astounded at the extent to which the shaft, head, articular cartilage and capsule of the shoulder-joint had apparently regenerated and at the absence of ankylosis after such a severe suppuration This favourable ending is adequately explained, however, on examination of the plate accompanying White's paper, together with the clinical history The bone removed at the operation was obviously the pyramidal upper end of the diaphysis, having no sign of the tuberosities upon it The case, therefore, must have been one of acute osteomyelitis commencing in the upper humeral metaphysis, followed by subperiosteal abscess and later by spontaneous separation at the upper epiphyseal line, the epiphysis



White's case of inflammation of the shoulder as she is delivered, if she is a person in affluent circumstances she is covered up close in bed with additional clothes, the curtains are drawn round the bed and pinned together, every crevice in the windows and door is stopped close, not excepting even the key-hole, the windows are guarded not only with shutters and curtains but even with blankets, the more effectually to exclude the fresh air, and the good woman is not suffered to put her arm or even her nose out of bed, for fear of catching cold She is confined to a horizontal position for many days together, whereby both the stools and the lochia are prevented from having a free exit The lochia, stagnating in the womb and in the folds of the vagina, soon grow putrid Amongst the poor people who live in cellars and upon clay ground floors, the air is made still worse by the dampness and closeness of their houses, the want of clean linen and of cleanliness in general nor is it to be wondered at that they are still in a worse situation in hospitals, where a number are crowded not only in one house but in one ward, where the disease is conveyed from one to another by the putrid miasmata lodging in the curtains, bed clothes and furniture

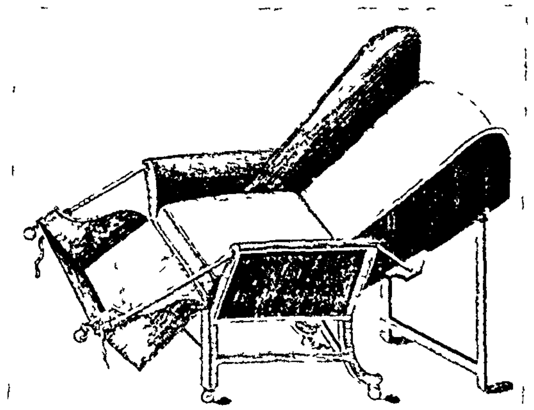

White's bed for the puerperium

Puerperal fever was rife, and the mortality disquieting White urged that special attention be devoted to all such matters as good hygienic surroundings, scrupulous cleanliness both personal on the part of all attendants and also of any material likely to come in contact with the patient —bed-linen, towels, sponges, instruments—proper ventilation of the lying-in chamber, maintenance of an even and moderate room-temperature so as to avoid either chill or over-heating, and correct posture of the patient after delivery In hospitals

If separate apartments cannot be allowed to every patient, at least as soon as the fever has seized one she ought immediately to be moved into another room not only for her immediate safety, but that of the other patients, or it would be still better if every woman were delivered in a separate ward and were to remain there a week or ten days until all danger of this fever is over Whenever a patient has recovered from this fever and is removed to another room the bedding and curtains should be washed, the floor and woodwork cleansed with vinegar, and it would still add to the salubrity of the apartment if it were stoved with brimstone

The posture of the patient after delivery was considered by White of great importance, and in his treatise he figured a chair and a bed which he employed, both designed to allow at will of variations in the angle at which the patient is raised from the horizontal Surgeons will at once recognise this position prescribed by White as identical with that advocated over 100 years later by Fowler, an American surgeon, in the treatment of peritonitis, the object of both White and Fowler being to obtain gravitational drainage It is refreshing to note that in his system of obstetrics and gynæcology A H Curtis (1933), of Chicago, accords the credit to White White advocated getting the patient out of bed soon after delivery—on the same day, if possible, and certainly not later than the second or third day As the result of his methods he reported that of the large number of lying-in patients he had delivered he had never lost one from puerperal fever, and of the few cases developing this complication from non observance of the rules laid down no life had been seriously endangered, nor had any case ended in madness or other disagreeable complaint He, however, qualified this statement as referable only to patients he had himself attended during the time of delivery, and excluded both those to whom he had been called in consultation after puerperal fever had already developed, and also those requiring the use of instruments Successful results of White's methods were also reported by Eli Cope—a former pupil—Professor Young of Edinburgh, Robert Collins of the Rotunda and others Sad to relate, however, a quarter of a century after White's death a serious fall from grace occurred both in the British school and on the Continent largely owing to French teaching The methods of White and his followers were abandoned and puerperal fever again became prevalent even in the Manchester Lying-in Hospital which White himself had founded Nor were matters any better in America when in 1843 Dr Oliver Wendell Holmes used his literary genius to direct public attention to this grave situation

In Vienna in 1789 there had been appointed a professor of midwifery who had studied White's methods in England, and who, in spite of strong opposition, had introduced them into the Vienna lying-in hospital—Professor Boer He held office for thirty years, during which 65,000 patients passed through the hospital with an average annual mortality from all causes of only 1 3% Boer's enemies succeeded in deposing him in 1822 on the pretext of insubordination because he refused to teach midwifery on the female cadaver instead of the leather phantom His successor Klein discarded the English methods and also taught upon the cadaver the mortality rose from 1 3 to 7 8% in his first year and remained high, in some months reaching even 29 3% From 1840 onwards the obstetric work was carried out in two divisions, the first reserved for the instruction of medical students, the second for that of midwives The students were encouraged to make frequent examinations of the patients before, during and after confinement, and practical instruction was given upon the female cadaver Moreover, the students often proceeded from the dissecting or the post-mortem room direct to the lying in room after a very perfunctory washing of their hands In the second division the midwives made just as frequent examinations, but their practical instruction was given on the leather phantom instead of the dead body, nor did they attend either dissections or post-mortems For the six years, 1841 to 1846, the average mortality in the first division was three times, and in 1846 four times that in the second division This appalling difference excited such notoriety and alarm that many women refused to enter the first division


White s chair for the puerperium

THE WORK OF SEMMELWEIS

Ignaz Philipp Semmelweis, who was then assistant to Professor Klein, had charge of the first division and most teachers of anatomy, Jordan had to rely upon the "resurrectionists", this becoming known an infuriated mob on one occasion broke all his windows and kept him prisoner in his own premises for several days Similar scandals in connexion with other anatomical schools and particularly the notorious murders by Burke and Hare in Edinburgh in 1827–28 and by Bishop and Williams in London in 1831, focused public attention upon the question of medical education A select committee of the House of Commons was appointed in 1828 to inquire into the provision of bodies for dissection in the schools of anatomy, and the removal of impediments to the cultivation of anatomical science, upon its report was founded the Anatomy Act of 1832, permitting the unclaimed bodies of persons dying in workhouses to be used for dissection

Jordan's school was closed in 1834, when its students and most of the contents of its museum were transferred to a school in Pine Street opened by Thomas Turner in 1824 This was the first complete school of medicine to be established in the provinces and, in recognition of this, it was granted the Royal patronage After absorbing two other rival schools, it was incorporated in 1872 with the Owens College In 1880 the Owens College became the first constituent college of the Victoria University, though the power to grant degrees in medicine and surgery was not obtained until 1883 and then only in the face of strong opposition from the Royal College of Surgeons and generally from the London medical schools

A not unnatural outcome of the advent of the provincial medical schools was a request that their certificates of attendance should be recognised by the licensing authorities in London and elsewhere So far as Manchester was concerned the Society of Apothecaries had already recognised the certificates of Jordan's school in 1817, of Turner's school in 1826 and of the Manchester Royal Infirmary in 1834, and so had the Royal College of Physicians In spite of repeated requests, however, such recognition was refused by the Royal College of Surgeons which in 1821 had issued a regulation requiring all candidates for its diploma to spend at least six months in study and dissections in the medical schools of London or of the universities of Dublin, Edinburgh, Glasgow or Aberdeen In 1823 another by-law refused recognition of dissections made in the summer months—a blow obviously aimed at the London private anatomical schools where instruction was usually continuous throughout the year so as to minimise the time and expense to the provincial student of the requisite period of study in London In 1824 a further by-law enacted that "certificates of attendance at lectures in anatomy, physiology, the theory and practice of surgery, and of the performance of dissections be not received by the Court of Examiners except from the appointed professors of anatomy and surgery in the universities of Dublin, Edinburgh, Glasgow and Aberdeen, or from persons teaching in a school acknowledged by the medical establishment of one of the recognised hospitals, or from persons being physicians or surgeons to any of these hospitals Guy's, St Thomas's, St Bartholomew's and the London" Thomas Wakley, founder and editor of THE LANCET, pointed out that the tendency of these two regulations was to direct all the fees which might accrue from the teaching of anatomy in England and Wales into the pockets of the London hospital surgeons he considered it not a little singular that of the ten members of the court of examiners by whom these by-laws were enacted at least seven were practising London hospital surgeons

The secretary of the Society of Apothecaries, however, in his evidence before the select committee, stated that "no young men came before the Court of the Society of Apothecaries better qualified in every respect than those who had been entirely educated at Manchester, where excellent lectures on every branch of medicine are given by very competent teachers and the Manchester Infirmary affords, under the physicians belonging to it, most ample opportunities for the acquirement of practical knowledge" Doubtless as a result of this inquiry the Royal College of Surgeons, in August, 1829, issued a regulation allowing certificates of instruction to be accepted "from the several towns in England possessing properly constituted hospitals together with such means and opportunities of teaching anatomy, physiology and surgery by lectures, demonstrations and dissections as shall be approved by the Court of Examiners" The compulsory six months' attendance at one of the London or other recognised schools in Ireland or Scotland was thus finally abolished and the right of the provincial schools to teach anatomy and physiology officially recognised

The results of the examinations in anatomy at the Royal College of Surgeons for a period of three years closely following upon this new regulation of August, 1829, displayed the provincial schools in a very favourable light as compared with those in London, their failures amounting to only 1 7% of total entries as compared with 7 8% of failures among London students

The struggle for the full recognition by the Royal College of Surgeons of clinical teaching at provincial hospitals continued In 1830 the Manchester Infirmary, with 360 beds, applied, with success, for the Royal patronage, and in the hope that this manifestation of Royal approval might influence the Royal College favourably the Manchester Royal Infirmary, as it had now become, on two occasions besought that body to place it upon the same footing with regard to certificates of attendance at clinical teaching as the recognised hospitals in London, Scotland and Ireland—but all in vain The chief provincial schools then petitioned Parliament, and in 1834 a select committee was appointed at which the opposition of the Royal College was voiced by its president, Mr G J Guthrie, and seven members of its council Sir Astley Cooper stated that "Country schools were at a loss in teaching principles, at practice they taught a good deal Students in London acquired a degree of information which was absolutely impossible to acquire from country teachers He knew members of the Manchester Hospital school and thought that a shorter residence in London would suffice for one who had been through it He did not believe that anything like perfection could be obtained anywhere but in London or in some very large town as Edinburgh, Dublin etc" Sir Anthony Carlisle, one of the surgeons at Westminster Hospital (which then possessed only 82 beds) said "Many of the general practitioners of the country have contributed to the improvement of surgery, as, for example, Mr White of Manchester and others, but if Mr White (or the others) had lived in London, I think the collision of metropolitan society would have made each of them greater men than they were—all great men in large states have been resident in the metropolis and, perhaps, have been raised to high eminence by that excitement"

Thomas Wakley, who strongly supported the claim of the provincial hospitals, had already indicated to the select committee on Anatomy of 1828 the absurdity of the position that the Royal College of Surgeons should accept one year's attendance at the Westminster Hospital with only 82 beds and yet required four years at provincial hospitals some of which possessed upwards of 300 beds He hinted that this might not be altogether unconnected with the fact that two of the four surgeons to the Westminster Hospital were on the court of examiners of the Royal College and all four were on the council by which the examiners are elected

Evidence favourable to the provincial schools was given by Mr J Somerville, inspector under the Anatomy Act, who said "Manchester, Birmingham, Liverpool and Bristol have opportunities of teaching anatomy that are not surpassed in any place or town," and by the secretary to the Society of Apothecaries who expressed the opinion that "Students from the country in general were quite as well instructed as those who study only in the schools of London and many evinced a very great deal of information indeed" Owing to a change in the Government following closely upon its sittings, the select committee never issued a report but published merely the evidence given before it The Royal College of Surgeons declined to give way until 1839 when it was finally agreed to accept certificates of attendance on the practice of surgery at any recognised hospital in the United Kingdom Thus was won the protracted fight for the full recognition of the provincial medical schools

Looking back upon this rather bitter controversy of just over a century ago one is left with the impression that the members of the College council of that period displayed an undue regard to self-interest, a narrowness of vision and a lack of foresight happily quite foreign to itself remaining in situ. The synovial cavity of the shoulder escaped serious inflammation owing to the extra-articular situation of the epiphyseal line, and so complete restoration of movement of the joint was not only possible but actually occurred. Thus, although White was not the first to excise the head of the humerus for disease yet, quite unwittingly, he really was the pioneer in the operation of partial diaphysectomy for acute osteomyelitis.

In 1762 White published in London a volume on the "topical application of the sponge in hæmorrhage," based on two communications to the Royal Society. The customary method of arresting hæmorrhage was then by the ligature, which, though successful as a primary application in amputations and other wounds, was said to be the most painful part of the operation since some of the soft parts were usually included within the ligature. Moreover, it frequently failed in lacerated and contused parts and in cases of what we now call secondary hæmorrhage, where the suppurating and softened tissues would not again bear ligation. White advocated the application to the bleeding point of a suitably sized piece of compact and thoroughly dried sponge maintained in place by the firm pressure of a bandage, or by strapping. In his communication to the Royal Society 13 cases were recorded where the use of the sponge had successfully arrested hæmorrhage when all other means had failed, and in his book he stated that he used it constantly, even for the larger arteries, without it ever having failed him. In 1770 he published a further series of successful cases (White 1770b), and he then noted that those parts of the wound to which the sponge had been applied were much cleaner than the rest. This led him to use dried sponge as a dressing to foul ulcers and abscesses, and he found that this cleansed them more quickly and effectually than any other method then known. He gradually developed the practice of leaving the sponge dressings undisturbed until they became definitely offensive, sometimes even for 10 to 14 days, and he would thus seem to have anticipated by over a century and a half the principle of the modern Winnett-Orr treatment of acute osteomyelitis.

White devised a method for reduction of dislocations of the humerus. An iron ring was screwed into a beam of the ceiling and one end of a pulley fixed to it, the other being fastened by bandages to the patient's forearm just above the wrist. The patient was then drawn upwards by the pulley until the whole of his body was suspended by the dislocated arm when, by direct pressure upon the head of the humerus it was usually readily pushed into its socket. To avoid too strong traction upon the forearm and wrist two persons were employed to support these. If a pulley were not at hand, three or four strong men, standing upon a table, lifted the patient by traction upon the arm held erect until his feet were clear of the floor, while the surgeon manipulated the dislocated humeral head. During twenty years he had not failed in any recent dislocation, though he had met with three old-standing dislocations which resisted all methods and remained unreduced.

White (1770c) obtained an interesting specimen post mortem from a female who died in the Manchester Lunatic Hospital in 1768, and who, fourteen years before, had undergone an operation for arteriovenous aneurysm following injury to the brachial artery during venesection. He presented it to John Hunter who placed it in his museum. It shows that three inches of the main artery were obliterated as the result of its ligation above and below the aneurysm, and that a very remarkable collateral circulation had developed.

Stone in the bladder was then common in Yorkshire, and White soon acquired a great reputation as a lithotomist. A large vesical calculus was one of the very few specimens saved from the fire which destroyed his museum; it was removed by him by lateral lithotomy. White's surgical contributions generally show a strongly conservative tendency, and he has, indeed, been acclaimed as the "Father of conservative surgery."

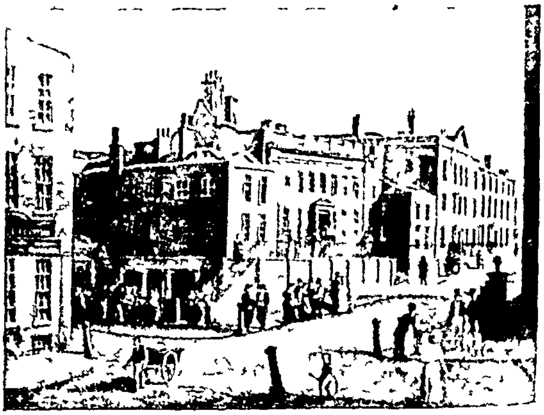
A STUDY IN EVOLUTION

Doubtless influenced by his early association with John Hunter he was always interested in natural history; of many papers read to the Manchester Literary and Philosophical Society the most important was a series on "The regular gradation in man and in different animals and vegetables, and from the former to the latter." They were published in book form in 1799. The idea was suggested to him when present at a lecture by John Hunter illustrated by a number of skulls which Hunter placed on the table in a regular series ranging from the human skull, with its varieties in the European, the Asiatic, the American and the African, downwards through that of the monkey and ultimately to the dog "in order to demonstrate the gradation both in the skulls and in the jaws." Stimulated by this lecture White, for some years, spent his scanty leisure in collecting and reflecting upon an enormous number of biological facts to prove the existence of gradation as a general principle running throughout nature. This might suggest that he had some inkling of the hypothesis of evolution, but he disbelieved in any progressive variation in species, considering that all species were unchangeable and retained the features which characterised them at the time of their creation. He stopped short of the logical conclusion, possibly because of his strong religious convictions.

In the course of these investigations he made measurements of the head and limbs of a large number of negroes among the sailors visiting the port of Liverpool. On this account he has been styled the "father of anthropometry," and this he certainly was so far as concerns living persons. Anthropometry, however, includes measurements upon the skeleton as well as the living, and in this aspect he had been preceded by Camper and others. But he was the first to discover that the forearm of the negro as compared with the upper arm is longer than the forearm of the European, and that of the ape longer than that of the negro.

PROVINCIAL MEDICAL EDUCATION

The first course of public medical lectures in Manchester (and probably in England outside London) was delivered in 1783 at the house of the Manchester Literary and Philosophical Society by Charles White and his son Thomas, and was open to the lay public as well as to medical men. They also started in 1787 at their own house in King Street the first instructional class confined to medical students, with lectures on anatomy and physiology.



Charles White's house in King Street where classes for medical students were first held in Manchester

In the early part of the nineteenth century those desirous of obtaining a medical qualification were obliged to attend hospital practice in London in order to become eligible for admission to the examinations for the licentiateship of the Society of Apothecaries or the membership of the Royal College of Surgeons. Only in London, Edinburgh, Glasgow, Aberdeen and Dublin were there any medical schools. In 1814 Joseph Jordan, the "Father of provincial medical education," as he has been justly styled, started a school of anatomy in Bridge Street, Manchester. His lectures quickly became popular and in 1817 were recognised by the Society of Apothecaries as qualifying to sit for their diploma—this being the first recognition of provincial medical instruction by any licensing body in this country. To obtain bodies for dissection was difficult in those days, and like

AND ORAL SULPHANILAMIDE ON
II IN MICE

No of mice ing on day		Survived 3 days	Av no of days survived
2	3		
		0	0
0	0	12	3 0
5	2	1	1 0
1	0	9	2 3
		0	0
2	0	7	1 9
0	0	4	1 0
2	0	8	2 2

u washed suspension of 18 hour
S hloride, intramuscular
m ig suspended in infecting inocu-
0 30 and 48 hours Local – oral
24, 30 and 48 hours

al
n 2 tality was increased to 100%
os e local sulphanilamide in a
oca uch less active When the
ury 10 mg the average time of
o u ed We therefore decided
tan tion and 40 mg of drug as
In nents
f th s made between the effects
nd f 40 mg of sulphanilamide
ith mg of the drug by mouth
ith 1 all mice injected locally
ven d for 3 days, whereas those
f o th had an average survival
umb ment 2, where twice the
me ected, the average survival
ter ion was twice as great as
n ad is also evident that when
ivan locally there is no great
Fig mouth
wh esults of three experiments
of the sulphonamides on

BLE

T OF THREE SULPHONAMIDE
ANGRENE ORGANISMS

Organ	verage number of days survived			
	ntrol mice	*Local*	*Oral*	Local – oral
l wel	0	1 4 2 0 1 6	0 2 0 0 5	0 8 1 7 1 8
l septiq	0	0 75 0 5 2 7	0 7 0 3 1 25	1 2 0 7 1 6
Cl demation	0	0 6 1 0 1 75	0 4 0 8 0 8	0 75 1 1 2 3

ch of th
red A s *of gas gangrene is com-*
ministra e against *Cl welchii* local
ee infec hree sulphonamides in all
re is n e than oral treatment and
ministra ge in supplementing local
gs are e by mouth All three
idine is laying death but sulpha-
inst *Cl* value than sulphanilamide
significan *atiens*, and sulphathiazole
inst *Cl* than the other two drugs
The exper *matiens*
njected ows that *if sulphanilamide*
ection in e left leg at the time of
t is give much less effective than
le v it is s bacterial suspension In
ctive if it phanilamide becomes less
n the co delayed
v be cond xperiments, therefore, it
siderable lphonamide drugs are of
vided the atment of gas gangrene
arge quan at the site of infection,
as possible

DISCUSSION

There are several favourable reports on the results of local treatment with the sulphonamide drugs in various types of infected wounds (Jensen, Johnsrud and Nelson 1939, Nitti 1939, Key and Burford 1940, Herrell and Brown 1940) and on experimental gas gangrene (Legroux 1940) Following on Legroux's work, local prophylactic measures with these drugs have been used in both the French and British armies with good results though *in a* certain number of cases gas gangrene did make its appearance in wounds (Handley 1940) Our experimental *results show that these drugs have a definite* bacteriostatic effect on the organisms of gas gangrene, but that it is much less, both in vitro and in vivo, than that against many aerobic bacteria For example, one knows that for a streptococcal infection one requires a sulphanilamide level in the blood of about 5–10 mg per 100 c cm, which is about 3 10^{-4} *M*, the concentration required for inhibition in vitro (Woods 1940) A much higher concentration of these drugs is required to prevent the development of gas gangrene, and there is no more convenient way of attaining this than by applying the drugs in large doses at the site of injection

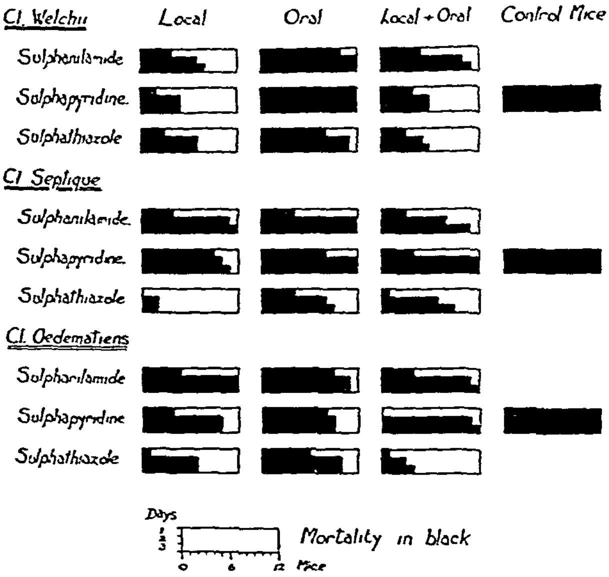


FIG 1—Comparative effect of three sulphonamide drugs on three gas gangrene organisms (see table III)

Regarding the choice of the drug to be used as a prophylactic against the development of gas gangrene in wounds our experiments indicate that the three sulphonamides used are of almost equal value against *Cl welchii* Since sulphanilamide is the cheapest and the most available of all the sulphonamides we would recommend its use in all such cases both for treatment and prophylaxis If the presence of another infecting organism is suspected another drug might be tried We advise that most wounds should be packed with at least 10 g of sulphanilamide, or more if possible If the dose were to correspond to our findings in mice it would be about 50 g, such amounts could hardly be applied to most wounds, so the inference is always to put in as much as possible

TABLE IV—EFFECT OF LOCAL AND REMOTE INTRAMUSCULAR SULPHANILAMIDE ON *CL WELCHII* IN MICE

Sulphanilamide	No of mice	No of mice dying on day			Survived 3 days	Av no of days survived
		1	2	3		
None	12	12			0	0
Local	12	3	4	0	5	1 6
Remote	12	9	3		0	0 25

Sulphanilamide.—Local = 40 mg along with infecting inoculum in right leg Remote = 40 mg in left leg the council of these days, when the interests of the London and provincial schools are guarded equably and impartially, and where representatives of each meet in the greatest harmony and good fellowship

That the association of Charles White with John Hunter as fellow-students produced a profound and lasting impression is shown by White's insatiable appetite throughout his long life for work of a practical and experimental nature, in his early start as a collector of specimens and founder of a museum, and by his studies in comparative anatomy, in botany, in fossils and in anthropometry Like Hunter, he was an eager and serious student of nature in all her protean manifestations John Hunter's indisputable right to immortal fame rests upon many factors, among others, his unique knowledge of anatomy both human and comparative, his persistent advocacy that " Structure is only the ultimate expression of function " with its consequent linking of anatomy with physiology and of both with pathology and surgery, his emphatic and enthusiastic insistence upon the experimental method of investigation, and, as a crowning glory, the foundation of our superb Hunterian museum, second to none elsewhere John Hunter loved work for work's sake, and although he acquired a lucrative practice yet money to him was of value only in that it supplied the wherewithal to continue his researches and to augment the priceless treasures of his collection His museum, said to have cost him £70,000 in additio years of incessant toil, was his only material pos at death, and, pending its sale to the Governm years later for £15,000, his widow was compelled to the King's Bounty Hunter's life's work calls viv mind those lines of Rudyard Kipling

> " And only the Master shall praise us, and only t
> Master shall blame ,
> And no one shall work for money, and no one sh
> work for fame,
> But each for the joy of the working, and each, in
> separate star,
> Shall draw the Thing as he sees It for the God
> Things as They Are ! "

I gratefully acknowledge assistance received fr D'Arcy Power, Dr E M Brockbank, Dr E Bosdin Prof W Fletcher Shaw, Mr W R Le Fanu, M A, li to the Royal College of Surgeons of England, and Wilson, librarian to the Manchester Medical Society

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CHEMOTHERAPY OF GAS GANGRENE

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Experimental and clinical studies have shown that the sulphonamide drugs have a bacteriostatic action on the causal organisms of gas gangrene These studies, at first confined to the effects of oral administration (Domagk 1937, Long and Bliss 1937, Stephenson and Ross 1940, Henderson and Gorer 1940), were extended to the effects of local application of sulphanilamide in infected guineapigs by Legroux (1940) and gave promising results However, the practical application of these findings to war wounds and air-raid casualties does not appear to have given results such as were to be expected from the preliminary experiments The experiments to be described were undertaken with the idea of finding how this discrepancy arose, and to probe further the local application of these drugs to wounds

In the first place, we considered it essential to produce a rapidly fatal intramuscular lesion in mice with *Clostridium welchii*, for this micro-organism is by far the most freqent cause of gas gangrene Because of the difficulty of reproducing regularly a virulent intramuscular infection with *Cl welchii*, much of the previous work on the chemotherapy of gas gangrene in mice has been done on *Cl septique* or on *Cl welchii* after intraperitoneal or intradermal injection However, using a virulent strain of *Cl welchii*, recently isolated from a severe case of gas gangrene, we were able to obtain regularly a mortality of 100% in 24 hours in mice after intramuscular injection along with calcium chloride as recommended by Bullock (Gye) and Cramer (1919) The successful production of this very severe muscular lesion in mice has afforded us a convenient test by which the relative merits of various preventive and therapeutic measures can be readily tested, and has also enabled us to assess the comparative value of three of the sulphonamides against *Cl welchii*, *Cl septique* and *Cl œdematiens*

MATERIAL AND METHODS

Preparation of bacterial suspensions—The strains of clostridia employed were *Cl welchii* B S I strain 186 from a recent case of gas gangrene, *Cl septique* B S I strain 84, and *Cl œdematiens* B S I strain 85 A relatively toxin-free suspension was prepared by centrifuging an 18 hour meat-broth culture and washing twice in saline The sus was then diluted to give an opacity which, in the con of our experiments, would kill all inoculated mice wi hours The opacities usually required for the three org corresponding to standard opacities for *Bacterium col* roughly *Cl welchii* 1000–2000 million , *Cl septique* 1500 million , *Cl œdematiens* 100 million per c cm

Inoculation of mice—The control, or untreated, mi injected in the muscles of the right thigh with 0 2 c equal parts of the bacterial suspension and 5% c chloride

Administration of drug—(*a*) *Local* For local adm tion the drug was ground in a mortar and suspended infecting inoculum so that the required dose of the dr contained in 0 2 c cm The mice were then injecte 0 2 c cm of the suspension in the same manner as the mice (*b*) *Oral* The mice were injected in the same the control mice and were immediately given 25 mg drug in a 10% suspension in 50% mucilage thro œsophageal cannula This dose was repeated at 6, and 48 hours (*c*) *Local and oral* This consiste combination of the local and oral administrations o the oral dose at the time of inoculation

EXPERIMENTAL

The results of our experiments are shown in tab where the effects of the drugs in delaying death estimated from the average number of days survi given in the last column This figure is obtain dividing the total number of whole days survi each group of mice by the number of mice in the (Whitby 1937) The mortality for only 3 days sidered, because mice living beyond this interval survived the immediate effects of the experi disease

TABLE I—EFFECT OF LOCAL SULPHANILAMIDE ON *CL*
IN MICE

Inoculum	Sulphanilamide (mg)	No of mice	No of mice dying on day			Survived three days
			1	2	3	
Culture (subcutaneous)		20	12	5	2	1
	20	20	5	2	1	12
Washed bacterial suspension + calcium chloride (intramuscular)		60	60			0
	20	12	8	1	0	3
	10	48	6	8	1	33

The experiments of table I show that 20 sulphanilamide given locally delayed death consid after subcutaneous injection of cultures of *Cl w* but we decided that the mortality in the control mi not high enough for further experiments We then washed suspension of the organisms injected along a the anus a carcinoma with fleshy overhanging edges d the lumen of the gut for 7 cm Muscularis invaded, ltrated fibrous adhesions fixing gut to posterior wall of dder and left adnexæ Golden yellow cortical adenoma cm in diameter in left adrenal Chronic venous conges- ı of small atrophic liver Very flabby myocardium

entral nervous system—Middle ears, bony and venous ıses clear Gross flattening of cerebral convolutions rked tentorial cone (left 1 cm wide, right 0 6 cm wide) ›tomeninges opaque and thickened over basal cysternæ th lateral ventricles equally and much dilated, containing ıtly turbid fluid, ventricular walls white but patterned h purple dilated veins Both choroid plexuses bound wn by bulky grey semi-translucent sheath of fibrin undant faintly turbid fluid throughout spinal thèca, and its lower end a thin waxy sheet (0 4 × 0 2 cm.) lying free ept for few tenuous adhesions

Microscopically—The outstanding lesion was a fibrino- rulent lateral ventricle choroiditis There was slight rivascular cellular infiltration of the ventricular walls, ıted to the sub ependyma The walls of the third ventricle re involved less There was an adherent pear shaped lypus of fibrin plugging the aqueduct of Sylvius Sections the frontal cortex showed no neuronal damage, but slight ononuclear infiltration of the subarachnoid space There re more abundant swollen macrophages and some fibro- astic proliferation in the cysterna magna The meninges of e cord showed nothing but slight perivenous lymphocytic filtration suggestive of a subsiding infection. Ziehl-eelsen and Gram stains did not show any organisms

Cause of death—Meningitis and fibrino purulent ventri- ulitis following spinal anæsthesia Acute internal hydro- phalus

ÆTIOLOGY

Routine bacteriological examinations of samples of erebrospinal fluid were made throughout the epidemic o organisms were recovered except in a single case in hich three colonies of a small gram-negative bacillus hich fermented no sugars were obtained on an inocu- ated blood-agar plate At the time this organism was hought to be an accidental contaminant and the cultures ere discarded Towards the end of the epidemic Prof Vilson Smith of the bacteriological department, Sheffield Jniversity, was asked to investigate the condition His nvestigations are not yet completed but he has allowed ne to quote the following note

A review of the circumstantial evidence pointed to a cold- water filter as being a possible source of infection This ilter was a Berkefeld multiple candle type and was connected directly to the roof water tanks The outflow water, assumed to be sterile, was used to rinse the lumbar-puncture needles which were kept in formaldehyde vapour The candles were frequently disconnected, scrubbed and boiled as otherwise they soon became blocked Three of the candles had recently been renewed but the other three were old and worn Water from both inflow and outflow pipes was examined bacterio- logically and by animal inoculation with a view to the isolation of a pathogen c virus No evidence of virus contamination was obtained but a small gram negative bacillus fermenting none of the usual sugars was isolated from both inflow and outflow water Attempts to isolate this organism from the cerebrospinal fluid of the only two cases still available were unsuccessful nor could serological evidence be obtained to incriminate it as the cause of the meningitis Animal inocula- tion experiments with these samples of cerebrospinal fluid were carried out in the hope of isolating a virus, these also were unsuccessful It is hoped to publish a full account of this investigation when completed

In view of these findings the use of the filter was promptly discontinued, after which no further cases of meningitis occurred Thus although circumstantial evidence strongly suggests the contaminated water as the source of infection direct proof of this has not been obtained

SUMMARY

In 11 patients out of 96 operated on under spinal anæsthesia in one theatre a low-grade meningitis developed All except one recovered completely. In the one patient who died autopsy showed a fibrino-purulent ventriculitis Circumstantial evidence pointed to a bacterial infection due to the use of a defective filter, but this could not be proved

My thanks are due to Prof Wilson Smith for his help

CULTURE OF INTESTINAL PROTOZOA

By S Adler, M.B Leeds, M R C P
PROFESSOR OF PARASITOLOGY IN THE HEBREW UNIVERSITY OF JERUSALEM, AND

Annie Foner, M R C S
ASSISTANT IN THE DEPARTMENT

With the extension of hostilities to the Middle East and the tropics the cultivation of intestinal protozoa has become of interest to a wider circle of workers, and the following notes on culture methods may prove useful

E HISTOLYTICA AND *TR INTESTINALIS*

During the last two years we have experimented with various media for intestinal protozoa, Boeck and Drbohlav's (1925) Dobell and Laidlaw's (1926) medium, bouillonserum media and a semi-solid medium of the following composition —

Agar (3%)	1 part
Locke (containing 0 1% glucose)	8 parts
Inactivated serum (horse, cow, goat, or human)	1 part

Rice-starch is added, as in Dobell and Laidlaw's medium

The medium is tubed in 5 c cm amounts

The semi-solid medium has several advantages over the usual media for the cultivation of *Entamœba histolytica* For the initial culture we use either fresh fæces containing amœbæ or cysts concentrated by the method of Yorke and Adams (1926), allowed to stand for half an hour in 5% HCl and subsequently washed by centrifuging in saline Although growth on the semi-solid medium is slower in the first few days the ultimate culture is much richer, for the amœbæ grow throughout the whole column and are not confined to the bottom of the tube as in the other media The culture attains its maximum in about 7 days and the life of a culture varies from 10 to 14 days

Even better results are obtained if this semi-solid medium is inoculated with a culture of *Bacillus prodigiosus*, and a day or two later is inoculated either with washed cysts or amœbæ from fresh stools Within 24 hours active amœbæ are found throughout the whole column of the medium and within 48 hours the culture is very rich The average life of a culture is about 7 days, but individual cultures may live up to 17 days The great advantage of this method is that with repeated subcultures the intestinal flora introduced in the initial culture is to a considerable extent modified, and rich cultures can be inoculated intraperitoneally or subcutaneously into laboratory animals without causing peritonitis or sepsis *E histolytica* can be obtained from mixed cultures of *E histolytica* and *E coli* by inoculating them subcutaneously into a rabbit, *E histolytica* is then recovered without *E coli* by culturing from the infected skin on to semi-solid medium plus *B prodigiosus*

A rabbit was inoculated subcutaneously and intra- peritoneally with a mixed culture of *E histolytica* and *E coli* Twelve days later a subcutaneous abscess was found round the site of the inoculation The abscess was opened and pus evacuated The pus contained no amœbæ The wall of the abscess was scraped and found to contain active *E histolytica* which was easily cultured on semi-solid medium + *B prodigiosus*

The advantages of working with a culture of *E histolytica* plus a non-pathogenic bacterium with the object of attempting bacteria-free cultures of *E histolytica* are obvious

The semi-solid medium plus *B prodigiosus* was found very convenient for the cultivation of *Trichomonas intestinalis* Rich cultures throughout the whole column of the medium are obtained within 24 hours and a culture lives up to 15 days

CULTIVATION OF *BALANTIDIUM COLI*

A case of balantidiosis was found in the Mea-Shearim quarter of Jerusalem under circumstances which practically precluded all possibility of contact with pigs Blood, mucus, pus and *Balantidium coli* were abundant in the stool Cultures were attempted on Yarbrough's medium, on Boeck and Drbohlav's medium with starch

TABLE V—EFFECT OF DELAYED LOCAL SULPHANILAMIDE ON *CL WELCHII* IN MICE (DOSE 40 MG)

Sulphanilamide given after hours	No of mice	No of mice dying on day			Sur vived 3 days	Av no of days survived
		1	2	3		
0	6	2	0	0	4	2
1	6	4	0	0	2	1
3	6	5	1		0	0 2
6	6	6			0	0
Controls	6	6			0	0

without interfering with the proper treatment and healing of the wound Although small doses of a few grammes might have some value they would be inadequate as a local application for most wounds, for results show that these smaller doses, even when supplemented by oral treatment, do not prevent the appearance of gas gangrene in certain cases This is apparently due to the rapidity with which these drugs are absorbed from the local area, as is borne out by our experimental observations on the elimination of these drugs in mice (fig 2) Again, in addition to their comparatively weak action on anaerobic bacteria, it is known that there are many products of breaking down tissue which inhibit the bacteriostatic action of these drugs (Fleming 1940)

The greater efficacy of the sulphonamide drugs when they are applied directly at the site of local infections falls in line with the finding of McIntosh and Whitby (1939) that these drugs act directly on bacteria by neutralising some metabolic or enzymic activity, and also with the recent work of Woods (1940) showing that sulphanilamide acts in bacterial cultures by blocking the utilisation of *p*-amino-benzoic acid, an essential metabolite for bacteria That this mechanism is the same in the therapeutic action of sulphanilamide on a streptococcal infection in mice was shown by Selbie (1940), and it therefore appears that the bacteriostatic effect of these drugs on a sensitive organism depends to a large extent on the concentration of the drug in contact with the infecting organism This is an additional reason for the direct application of the sulphonamide drugs to the infected area

Preliminary experiments seem to suggest that antitoxin is less effective than local sulphanilamide in preventing the development of *Cl welchii* infection in mice injected intramuscularly with calcium chloride as an aggressin when the culture is of high virulence A dose of 2 5 units, equivalent to 8000 units in man, saves fewer mice than local sulphanliamide However, small doses of antitoxin prevent the death of mice after the intramuscular injection of cultures of *Cl welchii* without calcium chloride and where the preformed toxin acts as an aggressin But in man at the time of wounding the aggressin would not be preformed toxin, it would be derived from the soil, and this would explain many of the failures of antitoxin to prevent the development of gas gangrene The treatment of an established infection is another problem where antitoxin is of great value in controlling the toxæmia A potent antibacterial serum, on the other hand, might be a useful adjunct to the sulphonamides in treating the initial infection

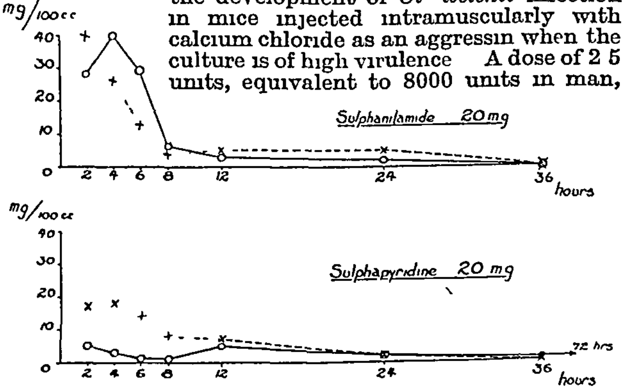

FIG 2—Sulphanilamide and sulphapyridine in blood after administration by mouth (dotted line) and intramuscularly (continuous line) in mice

SUMMARY

A study has been made in mice of the prophylactic value of sulphanilamide, sulphapyridine and sulphathiazole against *Cl welchii*, *Cl septique* and *Cl. œdematiens*

The results show that these drugs are of considerable value in preventing the development of gas gangrene provided they are administered locally, in large quantities and soon after the infection We recommend sulphanilamide as the most suitable prophylactic against anaerobic infections of wounds

All three drugs were found to have much the same value against *B welchii* infections, with sulphapyridine slightly the most effective Against *Cl septique* and *Cl. œdematiens*, however, sulphathiazole is of significantly greater value than the other two

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MENINGITIS FOLLOWING SPINAL ANÆSTHESIA

REPORT ON 11 CASES

BY H J BARRIE, B M Oxfd
PATHOLOGIST TO THE ROYAL HOSPITAL, SHEFFIELD

IN July, August and September, 1940, 11 cases of meningitis occurred among the 96 patients who were operated on under spinal anæsthesia in one theatre of the Royal Hospital, Sheffield, during that period The clinical signs and pathological findings resembled each other One case was fatal and an autopsy was obtained

No particular age-group was affected The operations were with three exceptions clean ones, such as repairs of herniæ and fractures The fatal case was a colostomy for inoperable carcinoma of the colon The spinal anæsthetics used were from different batches of light Percaine

Clinical course —In 9 of the patients there was a rise of temperature to 100° F or over within the first three days after operation There were no noticeable symptoms of meningeal irritation at this stage All of them complained of abrupt onset of severe headache between the 7th and 10th days after operation and in most this was associated with drowsiness, irritability, photophobia, neck rigidity and a positive Kernig's sign Blood counts when done showed a polymorphonuclear leucocytosis

All cases, except the fatal one, were free from temperature and symptoms by the 18th day after operation, 9 when examined four weeks after had no residual signs or symptoms apart from slight lateral nystagmus In the fatal case the patient became comatose and died within 7 days of the onset of symptoms

Lumbar puncture was done in 6 cases The fluid wa clear or faintly turbid The protein averaged 100 mg per 100 c cm with the highest reading 160 mg and the lowest 60 mg Chlorides averaged 660 mg per 100 c cm , highest 720 mg , lowest 640 mg Cells averaged 450 per c mm , highest 1100, lowest 9 There wa either slight preponderance of lymphocytes or poly morphs and in the average they equalled each other There was no change in the gold curves except for on mild meningeal reaction No tubercle bacilli or oth organisms seen in films In 2 cases a second lumba puncture within two days showed an increase of prote and fall in the number of cells

AUTOPSY FINDINGS

Female, age 59 Wasted Recent healing left lo paramedian incision Patent left iliac colostomy, and 22 difficulty of joining in small talk, in short, in banalities. He thought that what the deaf person missed should not therefore produce such an intense feeling of isolation and that there must be other reasons for this. He suggested that in the subconscious mind of every human being was the idea that he had a natural right and an inviolable claim to the integrity of his body and its organs. Anyone who lost this integrity experienced a severe psychic shock, increased by the thought of future progress of the defect, and from this shock there developed a traumatic neurosis. Some of the deafened were able to regain their mental and moral equilibrium unaided but for many psychotherapeutic guidance and influence would be necessary.

Dr A. B. STOKES said that his interest in the subject was related to a study of deaf people at the Maudsley Hospital and at the psychiatric department of King's College Hospital. He wished to take a wider viewpoint than that of deafness. The psychological associations of any organic disability considered from the point of view of psychosomatic medicine raised the question whether such associations were specific for the particular disability. But in the clinical field it was found that whatever the organic disability the psychological response considered broadly would take one of few paths, and that these paths remained the same for all organic disabilities and were not specific for any one of them. Thus one might get an anxiety, depressive, hysterical or paranoid response to the onset of blindness, the loss of a leg or to the discovery of a weak heart. Further the pattern of reaction seen could be traced back in time before the disability was established and recognised as a component of the personality, though operating less overtly when there was no hardship. Thus the underlying factor mainly determining the psychological response was the personality make-up. These organic disabilities produced the same results as other forms of stress such as the death of a wife, the crash of a business or the failure to achieve marriage, and each had its root in the personality of the individual concerned. But a particular organic disability, considered as a stress, might pick out a type of person to whom it was a special hardship. Out of the total temperamental responses deafness in such a person evoked the response to which he was temperamentally inclined. A depressive state might arise in a person who in earlier life had shown that type of response to situations involving stress. He might show retardation of thought and action, might have self-depreciatory ideas and be filled with gloom about his present, his past and his future. Similarly according to the individual, hysterical, obsessional or paranoid responses might develop. Yet with all these possible abnormal responses the number of deaf people in a psychiatric clinic was not greater than would be expected from their distribution in the general population. It was people of susceptible personality make-up who broke down under the strain of deafness. When the personality had to adjust to the onset of a stress such as deafness the effect of the speed of onset required consideration. In a general way more acute situations precipitated, in predisposed individuals, an affective response (usually either depression or anxiety) or a hysterical state, whereas a slowly developing deafness enlarged the possiblity of compensation but might bring out, in predisposed people, a paranoid response. Treatment was not approached with pessimism. The lessening of the load by hearing-aids, by lip-reading and by social re-adjustments would allow compensations to develop within the personality. An understanding of the kind of person to be dealt with indicated where the best compensations might be fostered.

Mrs IRENE EWING dealt in a particular rather than a general way with the psychological effects of deafness. They depended on many active and reactive factors in addition to deafness itself—the health and age of a patient, his environment and previous experience, his social attitude and his disposition towards difficulties, his intelligence and physical and mental readiness or unreadiness to acquire new habits; the nature of his work and interests, his resourcefulness and his sense of humour. On the basis of clinical evidence it could be shown that there were special psychological problems arising from deafness which could be simplified or solved by taking into account the information afforded by the otologist's diagnosis together with the results of pure tone tests of hearing by both air- and bone-conduction and tests of hearing for speech with the aided and unaided ear. The results of these tests would yield information on two vital points—the extent to which a deaf patient could be enabled to hear speech in his daily life and the extent to which hearing could be helped by lip-reading, and how far a patient was likely to retain or lose normal speech habits. She emphasised that mental and social life was largely conditioned by one's capacity to communicate freely with others. She analysed the case-histories of patients of all types and ages who had attended the clinic for the deaf at Manchester University under four headings:—

(*a*) Did the kind and degree of the patient's deafness influence or hinder his manner of thinking? How far did it set a limit to the range of his thoughts and interests?

(*b*) Capacity to follow the spoken word.

(*c*) Ability to talk intelligibly and audibly.

(*d*) Capacity to earn one's living—an important factor in mental life.

All the available evidence, including her own personal experience, combined to show that the most serious psychological effect of deafness was the extent to which it restricted speech experience. From this limitation arose all the familiar symptoms of unhappy mental life, uncertainty in action and the distrust of self often seen in deaf patients.

Reviews of Books

The Orientation of Animals

By G. S. FRAENKEL, lecturer in physiology in the department of zoology and applied entomology, Imperial College of Science and Technology, London; and D. L. GUNN, lecturer in zoology, University of Birmingham. London: Humphrey Milford, Oxford University Press. Pp. 352. 21*s*.

THIS is an engaging book which could be described in half a dozen ways, so truly have the authors transcribed their knowledge, their love of law and order, their philosophical beliefs and their enthusiasm. Orientation is not used in the restricted sense which the purely "human physiologist" tends to take for granted; the book is about the reactions of animals, chiefly invertebrates, to influences like light, temperature and humidity. Equilibrium of mammals in relation to gravity gets short shrift, and the reader will gain more information on this subject from other sources.[1] From Fraenkel and Gunn, however, he will learn almost everything else about orientation, and when he is not engrossed in such problems as what guides the bed-bug, or how the ant finds his way home, he will find himself wanting to argue with the authors about free will or about the degree of probability that a certain type of flatworm would migrate from light to darkness if it had ideal properties. Terminology is their first preoccupation, and in classifying the types of reaction whereby animals become oriented (or orientated, as they inexplicably prefer to say) with reference to a stimulus they adhere to terms which have the maximum of objectivity and imply the minimum of anthropomorphism; indeed, they are, if anything, at too great pains not to be misunderstood. The second part of the book is more detailed and deals with the conditioning stimulus—its type, its possible modes of action, and its manipulation so as to yield the information required. All kinds of experiments are discussed, with a wealth of example and illustration, and a bibliography, which make the book valuable for reference.

The World and the Atom

By C. MOLLER and EBBE RASMUSSEN. London: George Allen and Unwin. Pp. 199. 10*s*. 6*d*.

THE world of Moller and Rasmussen is not the world about us but the world of the atom itself. They have succeeded, not so much in giving us a picture of atoms as they exist, as in gradually unfolding the discoveries that have led to the prevalent ideas of the sort of processes going on inside atoms. The discovery of the electron opened the epoch of research into the way of an atom, and it is common knowledge that this discovery alone and with starch and diastase or benzpyrene, on the semi-solid medium alone or with diastase or *B prodigiosus*, or both

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[1] See Ellis, M. *Lancet*, 1940, 2, 371.

On Barret and Yarbrough's medium (1921) there was survival for 2 days, but no multiplication was observed On Boeck and Drbohlav's medium with the addition of rice-starch, cultures were obtained but were irregular and subculture was not always successful The balantidium grew at the bottom of the medium and up to 10 protozoa were found on coverslip preparations Cultures lived up to 11 days, the average life being 7 days The addition of a trace of benzpyrene improved the culture, up to 50 protozoa per coverslip preparation were found

We found the semi-solid medium plus Taka-diastase (1 5000 medium) much more satisfactory than Boeck and Drbohlav's medium for the culture of *Balantidium coli* Coverslip preparations from the bottom of the medium showed up to 250 protozoa per preparation, cultures lived up to 28 days, the average life of a culture being 10 days The addition of diastase is a great advantage, for it both enriches and prolongs the life of the culture Without diastase preparations showed only 5 or 6 protozoa per coverslip preparation and the average life of a culture was only 5 days

By far the best results were obtained with the semi-solid, serum-starch medium inoculated a day or two previously with *B prodigiosus* The balantidium grew throughout the whole column of the medium and showed up to 450 protozoa per coverslip preparation Cultures lived up to 28 days and the average life of a culture was 12 days The addition of diastase appreciably improves the culture and lengthens its life Encystment occurs in cultures but conjugation was not found Maximum multiplication takes place at a pH of 6 7–7 0 and the cultures die out when the pH approaches 5 0 Our strain of *Balantidium coli* was not very sensitive to temperature and grew both at 30° C and at 37° C, the best cultures being obtained at 30° C

With all these three protozoa a very small inoculum suffices for producing cultures on the semi-solid medium plus *B prodigiosus*

SUMMARY

A simple medium is described suitable for the cultivation of *Entamœba histolytica*, *Trichomonas intestinalis* and *Balantidium coli*

This work was carried out with a grant from the Dazian Foundation, New York

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DYSENTERY DUE TO *B DYSENTERIÆ* NEWCASTLE

PREVALENCE IN EDINBURGH

BY A J RHODES, M B Edin, M R C P E
LECTURER IN BACTERIOLOGY, UNIVERSITY OF EDINBURGH

THE organism now known as the Newcastle dysentery bacillus was first recognised by Clayton and Warren (1929a, b) in an outbreak of dysentery in Newcastle-on-Tyne A number of strains of this bacillus have since been extensively studied by Boyd (1936, 1938, 1940), and following his work on antigenic structure it is now generally held to belong to the Flexner group, although admittedly differing in biochemical properties from typical *Bacillus dysenteriæ* Flexner

Of recent years the Newcastle bacillus has been isolated on various occasions from cases of dysentery in Great Britain—e g, Scott 1938—and it is the object of this note now to record its present prevalence in Edinburgh Thus, in 1940, of 187 cases of bacillary dysentery proved in this laboratory by isolation of the causal agent from the fæces, 113 were found to be due to *B dysenteriæ* Flexner, 47 to *B dysenteriæ* Newcastle, and only 27 to *B dysenteriæ* Sonne It can be seen, therefore, that at the moment the Newcastle bacillus is a common cause of dysenteric infection in this city

The strains of *B dysenteriæ* Newcastle isolated in this laboratory have the following characteristic properties After 24 hours' growth at 37° C in the usual range of peptone water "sugar" media the only change noted is fermentation of glucose with formation of acid and usually a small bubble of gas at the top of the Durham tube On further incubation for 3 to 4 days weak acid-production may occur with dulcite, again with a bubble of gas Certain strains may ferment maltose, with weak acid-production, a bubble of gas is only produced by a few strains, the time taken for this reaction varies from 24 hours to 5 days All strains are non-motile and do not form indole or ferment lactose, saccharose, or mannite Final identification of strains having these characters is now rendered straightforward by the use of a specific antiserum prepared by the Oxford Standards Laboratory An agglutination test is set up with a saline suspension of the organism and varying dilutions of the Newcastle antiserum, incubation being carried out at 55° C for 4–6 hours The tests are read after standing at room temperature overnight, well marked agglutination of the granular type usually taking place to the titre of the serum

I am informed that, clinically, these cases of infection with *B dysenteriæ* Newcastle are of the prevalent mild type, and cannot be distinguished from those due to Flexner's or Sonne's bacillus

I am indebted to Dr Alexander Joe, medical superintendent of Edinburgh City Fever Hospital, for the clinical information contained in this note

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Medical Societies

ROYAL SOCIETY OF MEDICINE

AT a meeting of the Section of Otology held on Feb 7 with Mr LIONEL COLLEDGE, the president, in the chair, a discussion on the

Psychological Aspects of Deafness

was opened by Prof HUGO FREY He said that since a great part of all our sense impressions passed through one hearing organ a study of the psychology of deaf people must be worth while from a theoretical and practical point of view There was nothing in the literature dealing exclusively with the subject though there were references to aspects of it in the writings of Nager, Eichholz and the Ewings, and of special interest were the confessions of the deaf themselves particularly those of Beethoven and Margaret T Monro In dealing with the subject he thought it essential to avoid sentimentality The deaf were not a uniform group On the one hand deaf mutes form a separate community among the hearing people, they were almost a separate variety of the species He asked "What is their conception of the outer world, of an unacoustic, mute world?" Deaf mutes did not usually suffer from mental depression because of their deafness Psychic abnormalities found in some of them were probably more an outcome of a general degenerative constitution Therefore even the highest degree of deafness did not in itself necessarily lead to a depressive state of mind Further, many of those who became deaf in later life—the deafened—still enjoyed life and all it had to offer them But in this group there were many who suffered from mental depression This, he thought, was due partly to their difficulties, partly to their exaggerated estimate of the extent of their defect and of its personal and social consequences Their main complaint was their isolation, the difficulty or impossibility of enjoying company and social life But it seemed to him that their loss was not really so great Intellectual life in our time depended much more on the optic sense than on the acoustic Science, politics, news and even amusement all could be conveyed to us by the written and not the spoken word The higher the standard of culture the more important because the optic and the less important the acoustic sense Often their intensively deplored isolation concerned the more trivial affairs of daily existence, the

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References Lancet, *November 16th, page 621* B M J *November 16th, page 679.*

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was made by the late Sir Joseph Thomson There is a bad blemish in the book where we read, on p 36, " By means of such experiments, which we owe especially to J J Thomson of England, the velocity of the (cathode) rays was now successfully calculated " This is followed on p 37 by " we may indeed assume that electricity consists of infinitesimal particles For this assumption proof was adduced by means of a great experiment in which Millikan of America succeeded in directly measuring the quantity of electricity pertaining to an individual electron " This is a complete travesty of the real position The foreword is by Prof Niels Bohr The book is almost devoid of mathematics and is written in conversational style, the authors remind us that spectroscopists, in the not very distant past, were regarded as " not far removed from cranks," but nowadays they are allowed into the society of the elect, in fact, whenever a new particle is discovered, the first question is " What *will* the spectroscopist say about it ? " The new physical discoveries about the atom have given the spectroscopist something to bite on, something much more tractable—or malleable—than the old, hard, elastic spheres of Kelvin-side In the last chapter a reasoned answer is given to the popular inquiry about releasing appreciable energy from excited, radioactive or bombarded atoms—apparently there is no hope

Fractures

By GEORGE PERKINS, Ch M Oxfd, F R C S, assistant orthopædic surgeon to St Thomas's Hospital London Humphrey Milford, Oxford University Press Pp 381 20*s*

THE author has compressed much into this small volume He writes clearly and concisely, but the short abrupt sentences may sometimes read more dogmatically than he intended His advice, allowing for the personal bias —which is as much a quality as a defect in surgeons—is sound and conservative, he always advocates the little less rather than the little more in treatment Several points about the book invite criticism, however One is the odd arrangement by which—to bring the diagrams opposite the relevant text—whole pages are left blank except for a line or two More serious objection can be taken to the section on skull fractures which is so sketchy as to be in places misleading, and the section on jaw fractures will seem altogether too lighthearted in tone to those who have treated such cases, the diagram of the four-tailed bandage contains its own condemnation The long bones are dealt with well, and the diagrams, though sometimes rough, generally make their point in a telling manner

Textbook of Medicine

(5th ed) Edited by J J CONYBEARE, M C, D M Oxfd, F R C P, physician to Guy's Hospital, London Edinburgh E and S Livingstone Pp 1131 24*s*

THERE are few changes in this edition Dr Maurice Campbell has succeeded Dr W H Craib as part author of the cardiovascular section, which has been worked over afresh The sulphonamide drugs have, naturally, introduced themselves at many points Blood-transfusion, as a topical subject, has been presented anew, concisely and effectively, by Dr F A Knott The sections on hæmatemesis, diverticulitis, and anorexia nervosa are rewritten, in the first of these Dr Conybeare makes due mention of Meulengracht but still prefers, himself, to give his morphinised patients nothing but sips of water and scraps of ice for 48 hours after they have vomited blood

The book remains one of the best medium-sized textbooks for the junior student

Principles of Hematology

(2nd ed) By RUSSELL L HADEN, M D London Henry Kimpton Pp 362 21*s*

THIS American textbook presents the old facts in a new guise and the new facts simply and with understanding It caters for students rather than for the specialist, but the novel and effective diagrams, charts and microphotographs compel attention and make important points arresting Like many good teachers, Dr Haden invites the charge of over-simplification of his subject but he disarms the omission-hunter by admitting that difficult technical methods are not included It is probably wise to limit the number of leukæmias the student should try to remember, but is there anything to be gained by keeping him in the dark about the value of sternal puncture in diagnosis ? We remember facts better than theories, but until it has been conclusively shown that vitamin K is converted in the liver into prothrombin it is best to keep it among the theories and risk forgetting what may have to be forgotten in any case Throughout emphasis is placed on the technique of examination, and the reader is constantly reminded that clinical interpretation requires accurate laboratory data and that both must be carefully weighed before diagnosis is made Case-records of more than 100 patients suffering from the various blood dyscrasias are divided into groups so that the differential diagnosis of splenomegaly, for example, may be readily made The repetition necessary to this method detracts a little from its decisiveness but it will teach the student what to expect and to look for in the wards The sections which deal with treatment are among the best

Hæmorrhoids and their Treatment

The Varicose Syndrome of the Rectum By KASPER BLOND, M D Vienna, formerly first assistant, Rothschild Hospital, Vienna, hon consulting surgeon, Municipal Hospital, Vienna Bristol John Wright and Sons Pp 140 15*s*

THIS book deals with the injection treatment of hæmorrhoids, fissure and fistula It advocates ambulatory treatment for these conditions and states that the operation for hæmorrhoids, for example, is not only non radical but is often followed by complications The author's complete disregard for modern advances in our knowledge of the surgical anatomy and surgical operations for hæmorrhoids, fissure and fistula is owing to his conception of a varicose syndrome of the rectum, upon which he bases the ætiology of all these conditions The translator, Mr E Stanley Lee, F R C S, in his preface, hopes that the theory put forward will arouse controversy, and well it may, since it cuts across all the established principles of proctology

Rectal Surgery

By W E MILES, F R C S, F R C S I, F A C S, senior surgeon to the Gordon Hospital for Cancer, and consulting surgeon to the Royal Cancer Hospital London Cassell and Co Pp 359 17*s* 6*d*

THIS book is an interesting and clear record of the life experience of an eminent specialist in rectal surgery Naturally on many points he expresses personal opinions, and some of these may not be acceptable to all The matter is well presented, and the illustrations and diagrams are particularly good

Cushny's Pharmacology and Therapeutics

(12th ed) Revised by G W EDMUNDS, M D, and J A GUNN, M D, D Sc, F R C P London J and A Churchill Pp 852 30*s*

THE decision in many medical schools to dissociate the teaching of pure pharmacology from therapeutics is important, and its repercussions are apparent in the type of textbook now appearing " Cushny " represents the old school Although an experimental pharmacologist, the author was fully alive to the importance of correlating his subject with its therapeutic application, and a substantial proportion of his book deals with medical treatment In the new edition—longer by some 40 pages, and containing a new section on sulphanilamide, and amplified chapters on the vitamins and internal secretions—the editors have worthily upheld the traditions of the work It remains one of the best accounts of the subject in the English language Against this type of book it is often said that the arrangement of the material is dull and out of touch with the realities of clinical experience No doubt there is some truth in this, but the drawback is inherent in the subject itself—the discovery of a simple and rational classification of the materia medica has defeated some of our ablest intellects Nevertheless, where angels fear to tread there has been not a little coming and going, the student is overwhelmed with the choice of textbooks, and many of the authors purport to have found a royal road to success in this line of study It is natural that the deficiencies of these manuals should only become apparent when the student is able to look back

THE LANCET

LONDON SATURDAY, FEBRUARY 22, 1941

THE HERITABLE FACTOR IN EPILEPSY

THE last 25 years have seen the steady growth of "symptomatic" epilepsy at the expense of the "idiopathic" group, until in certain circles, especially in France, the existence of the latter has been denied altogether Most clinicians would, however, recognise that in the majority of cases there is an interplay of an inherited factor with some local want of development, trauma or disease in the brain The assessment of the heritable factor has long been the subject of controversy, but startling light has been thrown on it by LENNOX, GIBBS AND GIBBS[1] They find that the incidence of epilepsy among the near relatives (parents, siblings and children) of 2130 epileptics is 2 4%, or about five times that in the general population Clinical evidence of this sort is likely to be incomplete and some of the findings are open to question Are fainting fits or an occasional convulsion in infancy, for instance, to be called epilepsy? More valuable as evidence in the clinical field of the heritable factor is the observation that if one of identical twins has epilepsy, in 70% of cases the other twin will be similarly affected

he establishment of objective laboratory evidence pilepsy, or of a predisposition to epilepsy, in the r relatives of epileptics would obviously be of -class importance Such objective laboratory lence is, according to LENNOX and his colleagues, vided by the electroencephalograph Electroephalograms vary, they admit, with the age of the ent, with attention, wakefulness and cerebral ivity generally, and with pulmonary ventilation, taken under standard conditions in the same ent they are constant and show individuality, ugh not indeed of the fingerprint standard Elecencephalograms of identical twins, they note, are ays similar whether the tracings are normal or ormal, and if they are abnormal, the same type dysrhythmia is always present, even when trauma other factor has induced what is on the face of it ymptomatic epilepsy in one of the twins They ve investigated by electroencephalography 183 r relatives of 94 epileptics, in most of whom the ease started in early life and—rather surprisly—only 2 of whom showed normal encephalos themselves The relatives included 143 parents, siblings and 4 children, and their ages ranged from o 78 years As a control group, 100 people were ilarly investigated whose families were believed be free from epilepsy In every case records were de from six areas of the cortex for at least twenty nutes, and the dominant frequency, constancy and ltage of the waves were the factors considered in ciding whether the tracings should be classed as rmal or abnormal Towards the end of each cord there was a short period of voluntary pulonary overventilation, but records made during s period were not classified as abnormal unless they showed the typical "wave and spike" formation of petit mal To obtain reliable records, free from artefacts, involves a high degree of laboratory technique, and their classification needs considerable experience Skilled as they are, the authors had to relegate about 7% of their records to a "doubtful" class

The results of the investigation are remarkable—60% of the relatives show abnormal tracings (2 2% of them had clinical epilepsy) as against only 10% of the control group The age of the relatives appears to have little influence on the incidence of dysrhythmia, nor does the age of onset of the disease in the epileptics themselves Dysrhythmia is as frequent among the relatives of those suffering from symptomatic epilepsy as of those classified as idiopathic The authors believe that symptomatic cases whose epilepsy begins in early life have, clinically, three times as many epileptic relatives as people in the general population, and idiopathic cases five times as many Sufferers from symptomatic epilepsy starting in later life, however, have not an unusual number of epileptic relatives Dysrhythmia is rather more frequent among the relatives of female than of male patients, and among the female relatives than the male The heritable factor, therefore, is rather stronger in the female But it does not seem to preponderate among relatives of the same sex as the patient, in other words, there is no sex-linkage In 55 out of the 94 cases both parents were tested In only 5% of these were the tracings from both parents normal and in no less than 35% both were abnormal The experience with identical twins suggested that there might be familial types of dysrhythmia, but the evidence of this is inconclusive, complicated as it must be by mixed inheritance and by the tendency of petit mal to disappear in adult life Nor is it possible to say whether inheritance varies with the degree of abnormality

What does dysrhythmia mean for the individual who is unfortunate enough to possess it? Undoubtedly it may mean potential epilepsy, and possibly behaviour disorders, migraine or even psychosis, and in younger patients these possibilities are much nearer probabilities and may even call for prophylactic medication In older patients who show no other sign of abnormality, fits are unlikely to develop unless they get an added cerebral lesion These findings, if they are confirmed and accepted, open up far-reaching implications 2 4% of the near relatives of epileptics have epilepsy, 60% (or twenty-five times as many) have dysrhythmia, therefore, if 0 5% of the population has epilepsy about 12 5% have dysrhythmia—a figure which corresponds fairly to the 10% found in the control group This gives about a 1 in 100 chance of two dysrhythmics mating, yet no less than 35% of the epileptics in the present series had two dysrhythmic parents—a fact suggesting, perhaps, mutual attraction of similar types of personality It looks as if a dysrhythmic (a potential epileptic or carrier of epilepsy) should ask for electroencephalographic tracings of his betrothed when contemplating marriage Here is a new and not altogether agreeable field for the family medical adviser, who would also have the uncongenial task of telling the parents of an epileptic child which of them was responsible for his disease, and which of his brothers and sisters were potential epileptics or

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[1] Lennox W G Gibbs E L and Gibbs, F A. *Arch Neurol Psychiat* 1940 **44**, 1155

CLIMACTERIC SYNDROME RELIEVED

"High Doses of Oestrin are usually unnecessary, at any rate for the commoner menopausal symptoms — such as vasomotor disturbances—and consequently oestrin injections are, fortunately, seldom required It has been my practice to begin with doses of about 500 I U daily by mouth If this does not control the symptoms the dose is raised to 1,000 this is usually completely effective There are, of course, certain more severe sequelæ of the menopause, which demand much higher doses Pruritis, Kraurosis, Leukoplakia vulvæ, fall into this class and, provided sufficiently high doses are given, the results are little short of miraculous "

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been overcome—although some British and American textbooks still retain quite out-of-date descriptions of the development of the red blood-cells. The material on which GILMOUR's ideas are based is essentially similar to that studied by his predecessors, so that it is unlikely that hæmatologists, particularly those interested in pathology, will, without stronger evidence, be induced to abandon the simpler schemes of erythrocyte development now current; they will no doubt prefer to wait for further elucidation of the definitive megaloblast.

A LIPOID DISORDER

IN England the name gargoylism has been associated for some years with a polydystrophy first described in 1919 by GERTRUD HURLER, and known on the continent as Hurler's syndrome. Children affected are usually mentally defective and have congenital bony deformities, large livers and spleens, strangely ugly faces and clouding of the cornea. There is, however, as we have previously noted,[1] *a forme fruste* in which mental defect may be slight or absent and the cornea may be unaffected. Few of the typical cases survive into adult life; their mental powers develop slowly for a few years, then gradually deteriorate, and death before the age of ten years is common, usually from intercurrent infection. Growth is normal for the first year and then slows up, so that all who survive infancy are dwarfed. The head of an affected child is large and his face flat; the bridge of his nose is depressed, profuse nasal discharge usually accompanying the deformity, and the front of the jaw is straight instead of curved, with the teeth set along it at intervals like palings in a fence. Commonly he cannot open his mouth more than a degree or two owing to partial fixation of the maxillary joint. His lips are thick and his full cheeks sag a little, producing a deep nasolabial fold. His eyes, usually large, have a steamy or ground-glass appearance of the cornea, and his broad eyebrows of coarse sparse hairs give his face an odd look of character. His ears are big and set low. His abdomen is large and umbilical hernia is common. He has rather short arms with the elbow-joints fixed in semiflexion; the mobility of his leg joints is also impaired so that his gait is crouching, clumsy and ungainly. Owing to dysplasia of the upper lumbar vertebræ there is usually dorsolumbar kyphosis; the rib margins are flared and the child may be pigeon-chested. The liver and spleen are usually easily palpable. Radiography often shows a long shallow sella turcica, broadening of the ribs and wedge-shaped flattening of the upper lumbar vertebræ, some of which bear an anterior hook-like process. The limb bones are also thickened and bossed, especially near the joints, owing to irregular epiphyseal ossification. So-called stigmata of degeneration, such as hypertrichosis and congenital heart defects, may be present; club foot and cervical rib have each been recorded once. Sexual development is likely to be delayed in those who survive puberty. In disposition these children are grave and gentle, lacking the gaiety often seen in the mongol and the microcephalic. Those showing the complete syndrome seldom learn to speak more than a few words, but they may acquire sphincter control for a time.

The condition is rare, although 6 new cases have lately been reported, 5 by HENDERSON[2] and 1 by ELLIS.[3] HENDERSON has found 48 authentic cases reported besides his own; 9 others were inadequately authenticated. Two or three children showing the syndrome may be born in one family, often interspersed between normal brothers and sisters. Twins have twice been affected, in one instance both children and in the other one of the pair showing the syndrome. Boys are slightly, but not significantly, more often affected than girls. In 5 cases the parents have been consanguineous, and the available evidence suggests that the condition is recessively inherited.

Only a few cases have been investigated fully post mortem, but the striking pathological finding is a deposition of lipoid, variably distributed. The lipoid is both intracellular and extracellular, and the intracellular deposits resemble the lipoid found in the juvenile form of amaurotic family idiocy. In the brains of 4 of his cases HENDERSON found the deposits *to be extracellular and chiefly perivascular.* Lipoid deposits have also been found in the anterior lobe of the pituitary, the liver, spleen, myocardium, lungs, thymus, testis and cornea, though these sites are not constant. The central nervous system shows degenerative changes in nerve-cells, particularly those of the basal ganglia and brain stem and the deeper layers of the cortex; the optic thalamus and hypothalamus may show gliosis. HENDERSON considers that the condition, like amaurotic family idiocy, is likely to prove to be a disorder of lipoid metabolism. He favours the name gargoylism, which was first used by ELLIS, SHELDON and CAPON in 1936,[4] but there are substantial objections to it. A minor one is its inaccuracy, a gargoyle, of course, being a spout which may or may not be decorated with a face, but which is in any case prominent and projecting. These children are exceptionally flat in the face; if we must be architectural they resemble some of the heads used to decorate corbels rather than gargoyles. A more serious objection is the offence which the name gives to the parents of these children, and, where intelligence is normal, to the children themselves. Rightly or wrongly we associate the word gargoyle with gross and grotesque ugliness. Those who have interviewed parents of such children know how wounding the name has proved. It should be replaced by some neutral and scientific designation. Hurler's lipoidosis might be appropriate. This would make a second disease named after a woman discoverer, the other being Klumpke's paralysis.

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[1] *Lancet*, 1936, 2, 1223.

[2] Henderson, J. L. *Arch. Dis. Childh.* 1940, 15, 201.

[3] Ellis, R. B. W. *Ibid*, 1940, 15, 215.

[4] Ellis, Sheldon, W. and Capon, N. B. *Quart. J. Med.* 1936, 29, 119.

IN a short review of war psychiatry, reprinted from the *Surgeons' Hall Journal* (Oct.-Dec. Term 1940), Dr. H. Stalker aims at giving the physician without expert knowledge an idea of the special problems of war-time. Using psychiatric literature of the last war and other more recent publications, and illustrating some points with a few observations of his own, he gives the main facts and touches all important questions. His views are sound and well founded. It would, however, be regrettable if the responsible authorities concluded from the smooth and pleasant reading this paper makes that everything practicable is being done, and that psychiatry is being used to the best advantage in the disposal of man power.

carriers of epilepsy on to the next generation Perhaps it is just as well that electroencephalographic investigations are not as simple as Wassermann tests, but require an expensive apparatus, highly perfected laboratory technique and long experience For the eugenist a fascinating field opens up Epilepsy is usually regarded as a Mendelian recessive trait, but this widespread dysrhythmia looks more like a dominant To breed epilepsy out by sterilisation or segregation of its victims has long been a eugenic day-dream, but if all dysrhythmics are potential carriers we should need a whole battery of machines to sort out the four million miscreants in our own country We must await confirmation by independent observers of the findings in this paper, and the criticism of other workers in the same field For the clinician, meanwhile, the heritable factor in epilepsy has achieved a new importance, and those who spoke slightingly of the idiopathic disease have been confounded

INFANCY OF THE BLOOD-CELL

Few subjects have been more debated among anatomists than the development of the blood-cells, and since many diseases of the blood are disturbances of maturation of the blood-cells pathologists are also immediately concerned Much of the controversy has undoubtedly been due to the fact that the results obtained from the study of birds and small mammals are not applicable in detail to man Gilmour[1] has now been able to examine a group of human embryos from early presomite stages (from Professor Frazer's collection) up to full maturity He finds that in the very early embryos blood islands form in the yolk sac, and from their walls the first hæmocytoblasts (primitive blood-cells capable of differentiating into any of the recognised types) arise , at first they develop into erythroblasts—called " primitive megaloblasts "—and some histiocytes , some of these primitive megaloblasts escape into the connective tissue and there proliferate, such foci of erythropoiesis remaining present until quite late stages In the 3–9 mm embryos, after the circulation is established, the cells in the blood-vessels are mostly primitive megaloblasts that appear to be hæmoglobinated After the 10 mm (six week) stage hæmocytoblasts appear in the liver and from them cells are developed that differ from the primitive megaloblasts in size and structural details and are called " definitive " The earlier basophilic cells of this definitive group are called " primary erythroblasts " and they ripen into " normoblasts " whose nucleus is pyknotic and whose cytoplasm contains eosinophilic hæmoglobin , sometimes, however, these primary erythroblasts develop eosinophilic cytoplasm before the nucleus becomes pyknotic, and then the resulting cells are again called megaloblasts, but " definitive megaloblasts " this time At this stage also, megakaryocytes appear in the liver Between the 10 and 26 mm (eight week) stages the formation of granular leucocytes begins in the liver and in various connective tissues, lymphocytes appear in the blood, and nucleated red cells in the blood fall to about 25%, some primitive megaloblasts being still present In the next four weeks considerable changes occur , hæmopoiesis begins in the bone-marrow—first in the clavicle—and all types of blood-cells, including megakaryocytes are found there, granular leucocytes appear in the blood and the nucleated red cells fall still further to 5% (all definitive megaloblasts and primary erythroblasts), lymphocytes are forming in the lymph-glands No very active hæmopoiesis was, however, found in the spleen or kidney at this period At the 200 mm (twenty three week) stage hæmopoiesis in the liver reaches its peak and thereafter decreases From this stage hæmopoiesis becomes steadily more adult, erythroblast formation in the general connective tissue has ceased, active marrow is present in long and flat bones, the malpighian bodies in the spleen are forming lymphocytes, and nucleated red cells in the blood are less than 1% Sometimes slight hæmopoiesis is still present in the liver at birth

In general outline this detailed account agrees with most previous accounts based on the view that the blood-cells are derived from a hæmocytoblast that is not identical with the lymphocyte Gilmour finds that, after the 48 mm stage, erythropoiesis and leucopoiesis are exclusively extravascular, thus differing from Doan and co-workers[2] who thought the former was intravascular The part of Gilmour's scheme that is likely to meet most criticism is his conception of erythropoiesis Naegeli, Ferrata, and Downey have been the main supporters of the view that the megaloblast is the erythroblast of the early human embryo, up to the 10 mm stage, and that the normoblasts are the definitive series which replaces them after this stage These megaloblasts are similar to the cells which appear in the bone marrow in untreated pernicious anæmia , they are derived from the same basophilic precursor that gives rise to the normoblasts (or primary erythroblasts) Both normoblasts and megaloblasts mature by becoming hæmoglobinated, and eventually losing their nuclei Normoblasts do not change into megaloblasts, or vice versa This type of scheme has received considerable support from pathological workers since it has enabled them to construct a workable theory of the ætiology of the anæmias Gilmour's " primitive megaloblasts " seem to correspond to the megaloblasts as understood by most hæmatologists , in addition there is his " definitive " group of megaloblasts that are developed from primary erythroblasts and represented as being capable of maturing into megalocytes or—via a pyknotic normoblast stage—into normocytes Between the 48 and 180 mm stages this process of development of normoblasts by shrinkage of definitive megaloblasts is important, he terms it " megalo-normoblastic erythropoiesis "

Superficially then it looks as if Gilmour differs from all present-day workers, with the exception of Lambin and de Weerdt,[3] in not regarding the megaloblast and normoblast series of cells as distinct, but in reality the only difference is that his definitive megaloblasts do not appear in previous schemes Since these cells are only indirectly related to the primitive megaloblasts it is a pity that some other name was not given to them For this conception of megalo-normoblastic erythropoiesis is likely to cause unnecessary confusion at a time when the confusion in nomenclature caused by the use of the name megaloblast for the basophilic early erythroblasts has at last whether there is a panacea for dental ills. The vagaries of the single case must be assessed by the dental surgeon o the best of his ability, and the treatment varied ccordingly.

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[1] Gilmour, J R *J Path Bact* January, 1941, p 25

[2] Doan, C A , Cunningham, R S and Sabin F R *Contr Embryol Carneg Inst* 1925 16 163

[3] Lambin, P and de Weerdt, W *Rev belge Sci méd* 1938, 10, 289

CHLOROFORM IN OBSTETRICS

NO-ONE would willingly reopen the old controversy about whether to use or not to use chloroform in labour, but Sheehan's[1] paper on acute yellow atrophy and delayed chloroform poisoning should not be overlooked either by habitual devotees of chloroform or by those who use it but rarely and then with misgivings. Both true acute yellow atrophy and obstetric yellow atrophy, which is a definite and separate entity, can be associated with labour without chloroform anæsthesia; they are similar clinically but the former arises from a gross liver necrosis and is very rare in pregnancy, the latter from a gross fatty change in the liver with an entire absence of necrosis. Sheehan describes delayed chloroform poisoning as being far commoner in obstetric than other types of patients, and maintains that this is not generally realised because the liver lesion is not always recognised as due to chloroform and is ascribed to the obstetric complications. Three types of lesion are associated with three types of patient. In the first there is an isolated cell lesion with a distinctive necrosis of scattered individual liver cells. This is the rarest form of delayed chloroform poisoning and occurs as the result of overdose in a healthy subject. Sheehan describes two cases, one dying 18 hours and the other 2 days after chloroform anæsthesia for delivery. The commonest type is the second, a mid-zonal necrosis. Of the nine cases cited by Sheehan all had a long labour before the administration of chloroform began (a mean of 3¾ days). Two of the patients died within a day of having chloroform; the others developed typical delayed chloroform poisoning and died 3–5 days after the administration. Some of these patients had relatively short anæsthesia, the longest being 45 min., and there was no clear relation between the amount of chloroform used and the severity of the illness. All of them had been almost starved for a few days before the chloroform was given and were probably in a condition of starvation acidosis, in which there is a nitrogen retention apparently due to oliguria from pressure on the trigone and ureteric orifices.[2] The third type, with a central necrosis, was found in two patients, each of whom had hyperemesis; they aborted with chloroform without preliminary intravenous glucose and died 3–4 days later with the clinical picture of delayed chloroform poisoning. These patients have a metabolic disturbance which includes both an acidosis and a gross uræmia, apparently related to the anhydræmia. The gross fatty infiltration of the liver seen in delayed chloroform poisoning in children apparently does not arise in obstetrics. Sheehan concludes that a healthy pregnant woman is normally resistant to chloroform, and the risk of liver damage from chloroform anæsthesia in such a patient is therefore remote, but that this risk is very real in patients who have a gross metabolic disturbance before their anæsthetic begins. The common factor in all cases, and one which is easily obviated and treated, is a starvation acidosis. He urges that as much attention should be given to the anæsthetic as to the obstetric problems. The history of the few days prior to anæsthesia is all-important, for, as Sheehan says, "the patient who has been left in labour for a few days without adequate treatment is extremely susceptible to what may be regarded rather as a poisoning by delayed chloroform than as a delayed poisoning by chloroform." He accounts for the greater frequency of delayed chloroform poisoning in obstetric hospitals than in domiciliary midwifery on the ground that it is to the hospitals that patients are brought for delivery when there has been long delay in labour and when starvation acidosis has therefore developed. If the history of the previous two or three days is studied he maintains that almost every case can be foreseen before the anæsthetic is begun, and that the general prohibition of the use of chloroform for fear of delayed poisoning is wholly unnecessary. Those who advocate chloroform in obstetrics can therefore point triumphantly to this article as vindicating their opinion, provided adequate precautions are taken. Sheehan does not touch on the incidence of immediate fatalities under chloroform anæsthesia and these are responsible for the opinion of many that the use of chloroform is unjustified because they cannot be foreseen, and because experience on the part of the anæsthetist cannot prevent them. Nevertheless, sudden death under chloroform in the labouring woman is extremely rare. These patients and these alone look forward eagerly to the arrival of the anæsthetist, and hence in them there is no fear of the anæsthetic itself, and therefore no outpouring of adrenaline into the bloodstream during induction. And it is the simultaneous action of adrenaline and chloroform on the heart which seems most likely to lead to fatal ventricular fibrillation.[3]

SEROUS FLUID

TEXTBOOK accounts of the different pathological fluids found in serous cavities tend to be clear-cut because most of them are a legacy accepted without criticism from older authors, but the clinician has good reasons for disillusion. When a pathogenic organism is isolated, or, more rarely, when a diagnostic group of tissue cells is seen, diagnosis is simple, but commonly the evidence is only circumstantial and not too trustworthy. Paddock's[4] review of more than 1500 fluids collected over 25 years is one of the few critical analyses of the accepted data. Apart from looking at a fluid the usual starting-point is the specific gravity and it is often held that 1016 is the dividing line between dropsical (transudative) and infected (exudative) fluids. Paddock found that 313 cardiac fluids from the pleural cavity had an average specific gravity of 1010 but 10% were 1016 or more, while tuberculous fluids averaged 1020, with 10% 1016 or less. In ascites 95% of cirrhotic fluids were in the transudative range while neoplastic fluids both from the pleura and peritoneum were evenly divided between the exudative and transudative specific gravities. A curious discrepancy exists between cardiac fluids from the chest and those from the abdomen, a third of the latter having a specific gravity of 1016 or more, with a correspondingly high protein content. It seems then that the boundary between the specific gravities of transudates and exudates is a broad elastic band rather than a sharp line. The cytological and biochemical findings in aspirated fluids are also variable though there are a few general indications to help in the individual case. Erythrocyte counts of over 10,000 per c.mm. were found by Paddock in two-thirds of neoplastic fluids and in a third of cirrhotic and pulmonary-infection fluids, but the possibility of damage by the puncturing needle may lead to doubt of the accuracy of all such figures. White cell counts are more useful, but in 85% of fluids associated with acute pulmonary infection, in 73% with tuberculosis and in 42% of neoplastic fluids there was a total count of more than 1000 per c.mm. The high polymorphonuclear leucocytosis in pyogenic infections is a great aid but there may be such a neutrophilia in non-infected cirrhotic fluids and in early tuberculous effusions, and Paddock records 9 proved cases of tuberculosis with more than half the cells polymorphonuclear. It follows that even with the most familiar pictures one has to be on guard in interpreting cellular findings. The same can be said of the protein content of the various types of effusions

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[1] Sheehan, H. L. *J. Obstet. Gynæc.* 1940, 47, 49.

[2] Crawford, M. D. *Ibid*, 1939, 46, 540.

[3] See Macintosh, R. R. and Pratt, F. B. Essentials of General Anæsthesia. Oxford. 1940. p. 174.

[4] Paddock, F. K. *New Engl. J. Med.* 1940, 223, 1010.

Annotations

COW'S MILK FOR NEONATAL HÆMORRHAGE

WORK on vitamin K in relation to the hæmorrhagic disease of the newborn has not yet cleared up the whole story of the pathogenesis of this condition Salomonsen of Oslo, who has already shown that the administration of small quantities of cow's milk to newborn infants during the first four days of life can almost completely prevent the hypoprothrombinæmia and prolonged coagulation-time of that period, now reports[1] that this prophylactic method is more effective in summer than in winter, when, in fact, the physiological prolongation of coagulation-time is greater than in the warmer months It is suggested that cow's milk produces its effect by inducing the growth of bacterial flora in the intestinal tract, thus stimulating the endogenous production of vitamin K, but Salomonsen does not explain how this is achieved, and indeed the details given in his latest paper make the whole subject more baffling than before He found that when cow's milk additions were made to the diet for the first four days of life there were certain practical difficulties when breast-feeding was successfully instituted In his most recent investigations, therefore, he has limited the administration of cow's milk to the first two days On the first day he gave 20 grammes of equal parts of milk and water on three occasions and on the second day 40 g of the same milk mixture three times He added 5% of sugar to the diluted milk, and—most important—the milk was raised to boiling point for two minutes in a water bath Investigations of the coagulation-time in a group of babies receiving cow's milk in this way shows an almost immediate effect compared with a control group fed exclusively on mother's milk The sharp rise in coagulation-time on the third and fourth days of life found in the control group did not occur in the group receiving cow's milk, and not until the eighth day did the values for the coagulation-time in the two groups coincide Spontaneous hæmorrhage occurred in 2 out of 10 infants of the control group—surely a surprisingly high proportion—and in none of the babies receiving cow's milk These results were obtained in the winter and were not so spectacular as in the previous summer investigations since normal levels for coagulation-time were not obtained Nevertheless it was sufficiently reduced to prevent the occurrence of spontaneous hæmorrhages and the method was therefore adopted as a routine in the obstetrical department of Rikshospitalet in Oslo Over a period of six months, beginning in November, there was no case of hæmorrhagic disease in the newborn among 1005 live births, while in the same six months in the previous five years there had been 40 cases in a total of 4783 live births The results seem clear but the explanation is obscure Boiled cow's milk appears to produce effects in the newborn baby's intestine which human milk cannot achieve It can scarcely be the direct introduction of living bacteria, and, if the seasonal variation now discovered by Salomonsen is considered, even dead bacteria are unlikely to be the explanation Does vitamin K or its precursor come into the story ? Is this present in cow's milk and is there a seasonal variation in the quantity ? Views on the boiling of cow's milk are unfortunately not so satisfactory in this country as in Scandinavia and it might prove dangerous to encourage the administration of cow's milk to infants in the early days of life here Until we know more it seems wiser to continue to treat the hæmorrhagic disease by injections of adult blood, promptly, on the earliest manifestation of the disorder Possibly there is a case for giving vitamin K to all mothers just before delivery as a prophylactic measure, this would be safer, on the whole, than giving of cow's milk to the baby But the method successfully adopted at the Rikshospital raises many points whose investigation may throw light on the still obscure pathogenesis of the hæmorrhagic disease of the newborn

THE FIRST PERMANENT MOLAR

DENTAL surgeons have lately been discussing the merits and demerits of extracting the first permanent molars as soon as they appear A A Wilkinson claims[1] that in 99% of mouths there is insufficient room for the teeth and that dental irregularities and the impaction of third molars are the result, if the first permanent molars are extracted as a routine, the evils of overcrowding disappear in every case, teeth drift into good alignment, the dental arches widen, caries is reduced and in 60–70% of cases entirely prevented, and, judging by observations continued over 25 years, pyorrhœa does not develop in later life He advocates removal before the roots of the second permanent molars are more than half developed, the best age usually being between 8 and 10½ years His illustrative cases all have satisfactory dentitions, but he publishes no models of the original conditions for comparison He is so emphatic that he should have presented more detailed evidence, in order to allay criticism Conclusions from independent workers would be valuable, but it is doubtful whether others are working along the same lines Statistics of the incidence of caries after the extractions would be specially useful, for though it is reasonable to suppose that interstitial caries might be reduced it is hard to see why there should be a reduction in occlusal caries It is widely agreed that these four molars ought to be extracted in some cases, but it seems a doubtful claim that every mouth would benefit Where the deciduous molars have been removed early, and the drifting of the remaining teeth has encroached on the space for the future premolars, it may be necessary to remove the four molars in order to prevent irregularities Similarly their extraction may prevent crowding where the jaws are unusually small The irregularities arising from these two causes, however, are seldom severe enough to require extraction of the four largest teeth, and choice should fall rather on the premolars, which are not so wide and which have the advantage of providing space near the front of the mouth where it is readily available for the incisors and canines The first permanent molars are more prone to decay than other teeth, and in cases where it is doubtful whether they will last until adult life it may be as well to remove them at a time when the spaces will tend to close up The fate of individual teeth cannot be decided purely on their own merits, the equilibrium between the two jaws must be considered Extraction of lower teeth may call for a reduction of teeth in the upper jaw, though loss of upper teeth does not necessarily call for compensating lower extractions Sometimes the removal of the first permanent molars may lead to excessive overlap of the upper and lower incisors, a condition unfavourable to the health of the incisors in middle life, sometimes the vertical position of the upper incisors is not maintained, and the natural fullness in the lip contour gives way to a shrunken appearance, sometimes spaces persist which are small enough to allow food to lodge between the teeth and cause discomfort and not large enough to permit the tongue to clear them easily In other cases the crowns of the lower second molars may tilt forward, forming a stagnant triangular area between themselves and the tooth in front, and this leads to local lesions of the periodontal membrane The second premolar commonly travels backwards, leaving a considerable space in front of it, in the region where the effort of mastication may be most concentrated Veterans can remember a similar vogue for removing the first permanent molar thirty years ago Today we may doubt

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[1] Salomonsen, L *Acta pædiatr*, *Stockh* 1940, 28, 1

[1] [illegible]

Special Articles

THE PREVALENT DISEASES OF LIBYA

By Philip Manson-Bahr C M G , D S O , M D Camb , F R C P
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Information on the nosology of Libya is difficult to obtain Such reports as exist, emanating from Italian sources, are scanty and sketchy, and are often derived from hearsay evidence Thus, the medical survey of this region in the ambitious work by Croveri, "Patologia Tropicale, Subtropicale e Parassitaria" (1935) is marred by the fact that the material appears to be culled from existing works on tropical medicine, rather than from personal observations, and is mainly remarkable for the bombastic foreword by the Duce himself on the political aspects of this region The epidemiology conforms to that of the North African coast and the diseases are similar to those of the contiguous Western Desert boundaries of Egypt with which I became familiar during the campaigns of 25 years ago

The colony of Libya (or Tripoli) is of considerable extent and covers an area of approximately 900,000 square kilometres The greater southern portion is composed of bleak unfertile desert (Libya proper); the northern of a rugged more fertile coastline, embracing small towns and cultivated patches with many historic associations and generally known as Cyrenaica and Tripolitania This coastal zone, being exposed to the maritime breezes, has a more salubrious and temperate climate, being blessed with a more abundant rainfall, than the torrid, arid interior The Italian colonists have divided the colony climatically into graduated zones—the maritime, steppe, subalpine, semi-desert and desert proper The rainfall is sporadic, limited to the months of October to March with a maximum intensity in December

MALARIA

Although benign tertian and quartan malaria are reported from the coastal region, it is the subtertian (*Plasmodium falciparum*) which is the most widespread and feared in the Southern desert (Fezzan) and, as in similar situations in Egypt and Algeria, a virulent type is met with in palm-fringed oases which under war conditions assumes most puzzling and protean forms, so much so that its true nature is often not suspected by the unwary From experience gained in the last war it appears that the most virulent forms occur most frequently in the cold season, as at the present time, and are conveyed by hibernating mosquitoes The main anopheline carriers are *Anopheles multicolor*, which breeds in salt water, and *A sergenti* which breeds in fresh (Kirkpatrick 1925), so that the former is more likely to be prevalent in the coastal districts and in brackish water in the interior

Subtertian malaria may manifest itself under such circumstances by prolonged typhoid-like pyrexia Splenomegaly, which is commonly stressed in textbooks, in primary affections is not always evident in these cases The algid cases, which form a high proportion, may assume an abdominal complexion, often associated with diarrhœa and dysenteriform symptoms and with intestinal disturbances, suggesting an abdominal complication, so that their true malarial nature may be overlooked The clinical signs may be confined to the hepatic region, simulating cholecystitis, or to the right iliac fossa suggesting appendicitis Surgeons especially should beware of these abdominal pitfalls and not be tempted to operate without ample microscopical investigation of the blood The cerebral forms may be comatose or epileptiform, and if hyperpyrexia is present may be mistaken, as they often are, for sunstroke or heatstroke Cerebral involvement may simulate mental disturbance, such as mania, or even alcoholism Cardiac and pulmonary forms have also been met with under war conditions In fact there is no limit to the clinical disguises which this type of malaria may assume

It is necessary to emphasise the value of intramuscular or intravenous injections of quinine dihydrochloride in these severe cases None of the newer antimalaria drugs can compete in efficacy with that of quinine in these emergencies, although Atebrin (mepacrine hydrochloride) is undoubtedly beneficial in the less severe cases This drug acts best in conjunction with moderate quinine therapy Blackwater fever as a sequel to subtertian malaria may be occasionally met with in the southern desert of Fezzan

Although subtertian malaria holds pride of place, yet benign tertian, on account of its persistency and liability to relapse, constitutes a severe military handicap It is in this infection that a combination of Plasmoquine (pamaquin or Præquine) and quinine is most effective in preventing relapses Quartan malaria from the military viewpoint is negligible

LEISHMANIASIS

Visceral leishmaniasis or kala-azar, occurs sporadically along the whole Mediterranean coastline When it turns up it is a medical curiosity, but it should be borne in mind that it is there Mediterranean kala-azar is mainly found in children and the strain of parasite is designated *Leishmania infantum*, it is probably conveyed by the bite of a sandfly *Phlebotomus perniciosus* A similar indigenous infection is found in the local dogs and is known as *L canium* The close association with the human disease is probably more than fortuitous

The easiest and most practical method of establishing diagnosis is by gland puncture It has only recently been discovered that in kala-azar there is a generalised adenitis and that the inguinal lymph-glands are almost invariably enlarged I have confirmed this in the last seven cases investigated, and, following the method of Kirk and Sati (1940) have been able to demonstrate Leishman-Donovan bodies in preparations made by gland puncture This is a simple procedure The gland is pinched between the finger and thumb and a dry sterile hypodermic needle (No 16) is inserted into it By massaging the gland, the lymph is forced into the lumen of the needle; by affixing the barrel of the syringe it is blown on to a slide then dried, stained with Leishman's stain, and examined

According to Adler and other authorities, the North African kala-azar is more resistant to antimony treatment than are Indian cases, but Adams and Yorke (1939) have recently introduced a new compound, 4 4' diamidino-stilbene, which has been tried out in Palestine by Adler and Rachmilewitz (1939) with eminently satisfactory results It is administered by the intravenous route, 360 mg being given within seven days

Cutaneous leishmaniasis, or oriental sore, occurs sporadically along the whole North African coast, beginning as a papule on the face hands or other exposed parts of the body It breaks down into an ulcer of highly characteristic appearance The diagnosis is usually easily made in the early stages and *Leishmania tropica* can be identified in the serum obtained from the edges of the sore by puncture with a hypodermic needle These sores spread in a chain manner via the lymphatics where they cause nodules to form and in which leishmania bodies may often be demonstrated This disease is also conveyed by a sandfly, the carrier being *Phlebotomus papatasii* A great number of remedies have been advocated In multiple sores intravenous antimony therapy seems to be effective. In localised individual lesions a cignolin paint seems to be most satisfactory The formula I advocate is as follows —

℞ Cignolin	gr 4
Ichthyol	gr 8
Ol cadini	♏ 40
Benzoli rect	ad ℥i

Fiat pigmentum To be applied to the sore daily for 14 days

RELAPSING FEVER

Relapsing fever is a common North African disease and is of two types There is the universally louse-borne infection which is prevalent amongst the Bedouin Arabs, especially during the winter months when they lie huddled together and swathed in not over-clean blankets, and which under these conditions is commonly associated with typhus Then there is the tick-conveyed form, the organism of which Croveri asserts is identical with *Spirochæta duttoni* from Central Africa Much more probable it is the strain known as *Spirochæta hispanica* which is conveyed by a soft tick—*Ornithodorus marocanus*

The albumin-globulin ratio remains as a rule the same in serous fluids as in the blood, but it is commonly found reversed in cirrhotic fluids The rarer types of fluids, such as chylous, mucinous and cholesterol, are associated with fewer primary conditions, but Paddock found chylous fluids from 5 patients with cirrhosis, 3 with neoplasm, 2 with nephrosis and 1 with subacute bacterial endocarditis Mucinous effusions are apparently always associated with some malignant growth in the abdomen

LEUKOPLAKIA AND KRAUROSIS

THE term leukoplakia vulvæ, in itself so specific and descriptive, has been loosely employed by gynæcologists to describe any condition of the vulva accompanied by white sodden and hyperkeratotic epithelium Dermatologists have for some time been pleading for a restriction of the term to its proper place and Agnes Savill[1] has attempted an exacter definition of what constitutes leukoplakia and kraurosis She divides leukoplakia vulvæ into three categories The first is false leukoplakia, really a lichenification of the vulva, due to prolonged irritation from scratching induced by pruritus, the normal skin grooves become exaggerated and the skin resembles grained leather, the colour of the skin surface is normal, pale or grey and covered with fine scales This condition resembles that described by Victor Bonney[2] as lipidosis vulvæ *It is never a precancerous condition* and removal of the cause of the scratching results in permanent cure The next important division of so-called leukoplakia is leukoplakic vulvitis Bonney defines this as an inflammatory condition with simultaneous changes in the epidermis and underlying connective tissue, both labia, clitoris, prepuce, posterior commissure, and, later, perinæum and anus are affected, but never the vestibule or the skin of the mons In the first phase the affected parts are red and swollen, in the second the labia are white, thickened and retracted, histologically this phase shows epithelial hypertrophy, elongation of the interpapillary processes, lymphocytic infiltration and disappearance of the elastic fibres in the upper part of the dermis with an increase in the deeper part In the third phase there is dense whiteness with red fissures, and the labia become flattened out In the final phase connective-tissue sclerosis is complete, the affected area is smooth and shiny, and the elevations of the labia and clitoris are almost ironed out There is no longer any pruritus This is a precancerous lesion The end-result may be a contracted introitus that closely resembles that left by senile kraurosis The third division, true leukoplakia resembling that seen on the tongue, is very rare[1] The importance of Savill's classification lies in the segregation of leukoplakic vulvitis from simple lichenification of the vulva The treatment of leukoplakic vulvitis may well be radical surgery on account of its precancerous reputation, while that of lichenification of the vulva can never be The term kraurosis should be reserved for a progressive sclerosing atrophy of the mucocutaneous coverings of the vulva, leading in time to a stenosis of the vaginal introitus and an obliteration of the prominence of labia and clitoris The mucous membrane is smooth, dry and shiny, the colour is white, yellow, red or spotted Often there are small telangiectatic spots especially around the urethral orifice, giving the appearance of a carbuncle, though falsely According to Savill kraurosis may be caused by involution of the ovaries produced by surgery or old age, or it may be associated with a recurrent infective dermatitis The second type affects much younger patients in whom the ovarian function is as yet unimpaired, the pathology seems to be exactly similar to that of the later phases of leukoplakic vulvitis The pendulum has swung back to the opinion of the gynæcologists that leukoplakia and kraurosis are—with reservations—one and the same disease There is much of interest in Savill's paper, but we cannot agree that the proper treatment of senile kraurosis is electrotherapy, when hormone treatment properly exhibited in suitable dosage has given such uniformly excellent results

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[1] *Brit J Derm* 1940, 52, 321

[2] *Proc R Soc Med* 1938, 31, 1057

SEX AND AGE DIFFERENCES IN TUBERCULOSIS

THE relatively high rate of mortality of young adult females from respiratory tuberculosis and its reluctance to decline in recent years are well-known features of this disease Reliable statistics of its incidence in the two sexes and at different ages are more difficult to come by and of interest, therefore, is a study recently made by Prof R M F Picken of the data published in the annual reports of the Welsh National Memorial Association[1] In the four years 1936–39 a total of more than 9000 new cases were reported, of which approximately 5000 were males and 4300 females In the first years of life, 0–14, there is no sex difference in incidence The populations at risk differ but little and there were 334 male and 343 female patients *In young adult life, 15–24, on the* other hand, there is a distinct excess of female cases, 1760 to 1403 males, although at these ages the female population is rather smaller than the male At ages 25–34 there is again little difference between the numbers at risk, and the incidence is also of the same order with *1123 male and 1205* female cases *After age 35 there* appears a pronounced excess of males—2180 males to 991 females—the populations at risk being approximately the same Further analysis shows that in the young adult group, 15–24 years, 53% of the females were Tb + in the sputum against 49% of the males, and 37% of the former were classified as clinical group *3* (advanced cases) against 30% of the latter In other words not only do a much larger proportion of new cases occur at young ages in females but also at these ages the prognosis is less favourable, as measured by the presence of tubercle bacilli in the sputum or the clinical stage to which the disease has progressed Although the data do not permit the calculation of real fatality-rates they suggest that, once contracted, respiratory tuberculosis is a disease of more serious prognostic import among females at practically any age and especially in young adult life Such observations from statistics accord with clinical experience, they cannot help us to explain these fundamental sex differences in the behaviour of the disease Are young women, for instance, Professor Picken asks, more exposed to massive infection in the home? Or is their special susceptibility entirely physiological? The answer, he suggests, must come from tuberculosis departments through a combination of clinical and pathological observations with social inquiry

THE Royal College of Physicians have appointed as their delegates to the B M A Medical Planning Commission Sir Charles Wilson, London, Dr H L Tidy, London, Prof J A Ryle, Cambridge, and Prof H P Himsworth, London The Royal College of Surgeons have completed their quota of delegates by the appointment of Mr A Wilfrid Adams, Bristol, and Mr John Hunter, London

THE Vice Chancellor of the University of Oxford has issued a statement, which has the authority of the Minister of Labour and National Service, saying that the reservation of medical students is unaffected by the proclamation of Jan 29, and that the extension of the reservation to all medical students is being considered

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[1] *Pub Hlth*, 1940, 54, 42

SUBSCRIPTION OFFER TO STUDENTS —The proprietors regret that owing to the present difficulties and heavy additions to cost they are reluctantly compelled to increase the students' subscription to THE LANCET from *10s 6d* to 1 guinea per annum as from 22 February, 1941

Africa. It is more likely to be non-venereal syphilis known throughout the African desert el This appears to be a mild form of syphilis attenuated a strain that it fails to reproduce ajor features of the disease as it manifests itself in eans In many instances the primary infection quired by contact and not by the genital route complications are apparently extremely rare and eadily amenable, as is yaws, to salvarsan therapy erating granuloma that particularly loathsome eally conveyed disease, with its peculiar features ethod of spread, is much to be dreaded in this part rica It is necessary that it should be detected when it is amenable to antimony therapy mphogranuloma inguinale or climatic bubo, is most universal infection among the native inhabit-

The main thing is to recognise the characteristic es The causal agent an ultramicroscopic virus, enable to sulphanilamide treatment

SORES AND ULCERS

e septic sore, or veld sore, is primarily a disease of the t and occurs on the knees, hands and other exposed rts of the body. Many of these sores are due to a htheritic infection of the skin as originally described Craig (1919) in the Sinai Desert They run a special ical course beginning with a vesicle (fig 1), usually nd a hair follicle and at the site of some previous ury, this bursts and forms a shallow ulcer which is tely painful A chronic punched-out ulcer with dermined edges results and may persist over a very g time (fig 2) In a proportion of cases diphtheritic ralysis may ensue, either of the iris, hands or feet, d, not infrequently the sores are associated with ucial diphtheria They are found mostly in cavalry its, in the camel corps, and to a less extent in the fantry and mechanised units They respond readily to tidiphtheritic serum Already a large number have en reported from the Middle East and are identical appearance with those seen 25 years ago Diphtheritic res have lately been found on horses, and this may be source of the human infection There are other kinds septic sores which may develop at the site of any nall scratch or abrasion

2—Desert sore Chronic punched-out stage Diphtheria bacilli isolated by culture.

The true tropical ulcer or sloughing phagadena is ommonly seen in underfed natives The ulcer, which is sually on the legs, is larger and deeper than the septic re, and is rapidly spreading and extremely destructive the underlying tissues The best and most practical ethod of treatment is by elastic plaster bandages

SCORPIONS, VENOMOUS INSECTS AND SNAKES

The Libyan desert is a land of pests and may be terally said to "rain scorpions" Seventeen species are sted by Zavattari (see Medulla 1937) The most angerous is *Prionurus australis*, especially during the ot season, when its sting has sometimes proved fatal to children and old people (Sergent 1938) The chief symptom of the sting is a burning pain radiating from the part The sting itself is often so small that it is very hard to detect Profuse salivation is usual The treatment is almost entirely symptomatic, but in severe cases anti-scorpion serum may be injected.

Venomous snakes include *Naja haje* the African cobra, and among the vipers are three species—*Cerastes cornutus* the horned-viper, which is specially deadly and perfectly camouflaged by its markings *Cerastes vipera* and *Echis carinatus*. the Indian "phoorsa"

Finally there is the black-widow spider *Latrodectus* (fig 3) commonly distributed throughout this area The species is probably *L lugubris* There are conflicting accounts regarding the severity of the effects of the bite of this insect, but the main feature is that occasionally it produces the appearance of an acute abdomen, with board-like rigidity and great tenderness The main point is to recognise that this is a toxic phenomenon and not to operate The toxin of the poison glands is a powerful hæmolysin, causing œdema and inflammation at the site of injection and sometimes an urticarial rash

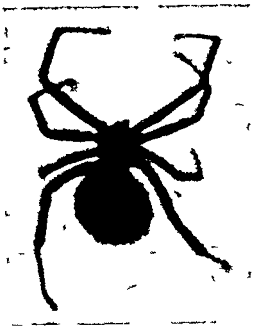

FIG 3—Black-widow spider, *Latrodectus lugubris*

I am indebted to the director and staff of the Bureau of Hygiene and Tropical Diseases for procuring references of local interest, and to Captain Manton, Army Dental Corps, for the photographs, which were taken in Palestine during this campaign

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A CONFERENCE ON A.R.P.

WHEN the Government, in those distant days before Munich, came to consider plans for A R P. they had to parcel the country into administrative areas and they decided to divide it into a number of civil defence regions too large to deal with the detail of planning It still remained to be decided which areas should be given the local autonomy of a scheme-making authority The Government chose county councils, the county boroughs, city councils and the metropolitan borough councils to be the authorities for this purpose This decision, apart from giving an added impetus to machinery which many had in the past declared to be outworn and apart from its perpetuation of boundaries formed by the union of 19th century vestries and the barter of properties in the Middle Ages, also gave to these local authorities the chance to justify their existence by the execution of a task bigger than any they had hitherto undertaken It is fair to say that the manner in which the scheme-making authority deals with its civil-defence responsibilities will constitute its claim or otherwise to survival in the reconstruction which will follow the war The administration of casualty services is not the least part of such an authority's responsibilities and many a man in general practice is now making his first contact with local government through his work in first-aid posts and mobile units We in the medical profession know only too well the contradictions and the difficulties—some of local some of central origin—which are involved in this work

On Feb 2 a conference was jointly held in Islington Central Library to which authorities in the London or *erraticus* The remedy for these fevers is, of course, intravenous injections of Neosalvarsan It may well be that the animal reservoir-host of this spirochæte is the desert rodent (*Ctenodactylus gondi*) known as the " gondi rat "

The Italians mention *sodoku*, or rat-bite fever, which is said to be found locally, but this is a universally distributed disease caused by a minute spirochæte *Spirillum minus*, and the reservoir-hosts are rats, mice and cats, by which it is conveyed to man through the bite Here again Salvarsan is the remedy

TYPHUS

Typhus is an Arab disease The epidemic form, louse conveyed, is prevalent among the Bedouins during the winter months The rash is often difficult, if not impossible, to distinguish on the dark skins, but may be made more evident on the arm by compression of the brachial vein The sequelæ of typhus among these nomads may often be more terrible than the fever itself Then there is the tick-conveyed " fièvre boutonneuse " The tick concerned is *Rhipicephalus sanguineus*, the common dog tick, and this animal is considered to be the reservoir-host of the virus A distinctive feature is the appearance of a primary sore at the site of the infecting bite which may subsequently become gangrenous and is known as the " tache noire " Lymphangitis subsequently develops The cause of this fever and the rash it produces are very similar to those of the louse-borne disease The diagnosis of typhus fever has been placed on a more secure basis by the Weil-Felix reaction, in cases of typhus the serum agglutinates emulsions of *Bacillus proteus* X 19 to high dilutions This proved of great assistance in diagnosis during the last war, especially in the louse-conveyed disease This reaction is not, however, found in fièvre boutonneuse and there appears to be some doubt whether serum from patients with this disease gives a reaction with the allied strain *B proteus* X K

SANDFLY FEVER AND DENGUE FEVER

These are two North African insect-borne fevers which are quite distinctive and may be of considerable military importance in the warmer months, especially towards autumn when the insects which convey them abound In the former the carrier is the sandfly, *Phlebotomus papatasii*, and in the latter the domestic mosquito, *Aedes aegypti* Both diseases are due to a virus which undergoes a course of development in the body cavity of these insects

Sandfly fever is of short duration, lasting as a rule from three to four days There are few distinctive signs apart from the injected conjunctiva which gives to the facies a bloodhound-like appearance which has given rise to the popular name " dog-faced fever " It is now thought that the virus is conveyed from one generation of the sandfly to the next by the habit of the larvæ of feeding on the decomposing carcasses of their progenitors which contain the essential cause of the disease

Dengue fever lasts from seven to ten days and culminates, in the majority of cases, in the characteristic dengue rash, described as being half way between measles and scarlet fever The bone pains of this fever are quite characteristic and the patient usually feels more ill than he really is In both these trivial fevers it is the disability during convalescence which constitutes their most serious influence on military effort

DIETETIC DISEASES

Of the dietetic diseases pellagra is most often seen in the aborigines of Libya It is essentially a malady of the underfed peasant farmer, and is not likely to be encountered, as it was in the last war, in British troops The causative diet is one deficient in protein, and it has been conclusively proved by Spies and his colleagues that lack of the P P factor (nicotinic acid) is the basal cause The mainstay in the diagnosis of pellagra is the triad diarrhœa, dermatitis and dementia Beri-beri is also a war disease of this region and manifests itself usually in the dry paralytic form Under modern conditions it is easily curable by injections of vitamin B_1 (aneurine or thiamin)

DYSENTERY

The dysenteries are war diseases par excellence In Libya, as in other parts of Africa, the bacillary form predominates, and this acute and often fatal disease is mostly to be feared in desert warfare The infection seems to be conveyed by the house-fly, *Musca domestica*, which swarms in this region It is to be hoped that lessons learned in the desert campaigns of the last war will not be overlooked in this—that bacillary dysentery (Shiga, Flexner and Schmitz infections) will be readily recognised and promptly dealt with by well accredited remedies The chief danger is that it may be mistaken for amœbic dysentery and emetine injections given to the detriment of the patient The main modern development in the treatment of acute bacillary dysentery is the recognition of the value of transfusions of blood, plasma, or even reconstituted plasma, in overcoming the dehydration and preventing collapse Anti-dysentery serum (anti-shiga serum) is of special value in Shiga infections Targesin, a complex colloidal combination of albumin with a diacetyl tannic acid silver salt, has been well spoken of The dose is two tablets by the mouth three times a day Moro's apple diet as a remedy against uncontrollable diarrhœa is also to be noted The explosive desert diarrhœas known as " gippy tummy " are probably manifestations of infection with Sonne's bacillus Such conditions are apt to be extremely disagreeable, as well as debilitating

Amœbic dysentery is a long drawn out and wearying disease which may assume a great variety of clinical forms and is seldom either very acute or fatal This infection, which is undoubtedly water-borne, is widely spread through the cultivated coastal districts Exact figures are difficult to obtain Grixoni has stated that *Entamœba histolytica* cysts occur in 1 8% of the Libyans, which seems a low figure compared with Egypt Similarly the assertion of Corradi that this protozoan accounts for 82% of clinical cases is probably an exaggeration. It will more likely be found that amœbiasis accounts for 7–10% of the cases of " clinical dysentery " The importance of eradicating amœbic infection from the intestinal canal with emetine bismuth iodide cannot be overstressed

HELMINTHIC DISEASES

Ankylostomiasis is said to be prevalent, its extent is unknown, but is probably comparable with that which obtains in Egypt among the native Libyans From experiences gained in the last war it is improbable that it will spread to the Imperial troops *Tænia saginata*, the beef tapeworm, is said to be common and arises from eating the beef of native cattle and possibly camel meat as well Ascaris and threadworm are prevalent, and attention may be drawn to the simple method of treatment with phenothiazine in doses of 4–8 g daily for 5–7 days (Manson-Bahr 1940)

Bilharziasis is also widespread throughout North Africa The urinary form *Bilharzia hæmatobia* occurs in the desert oases, especially in the Southern districts of Fezzan and Ghat The intermediary host is, as in Egypt, the snail *Bullinus contortus* In some districts, according to Zavattari (1934), 60–80% of boys and 15–20% of adults are infected The intestinal form, *B mansoni*, has also been found (Cicchito 1938), and the intermediary host appears to be *Planorbis pfeifferi* which is especially numerous in the oasis of Ghat

VENEREAL DISEASES

Croveri says that yaws is prevalent in Arabs, but it is improbable that it is the same disease as is present in Central and

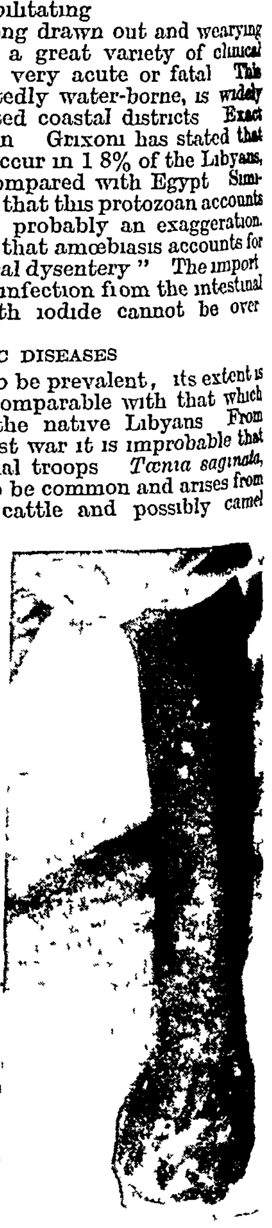

FIG 1—Desert sore Early vesicular stage Diphtheria bacilli isolated by culture

In England Now

A Running Commentary by Peripatetic Correspondents

I AM one of those who believe that soldiers should be in roper soldiers' hospitals under the care of soldiers' octors, but I am not frightened by your insistence (Feb , p 149) that in these hard times everyone should share he base hospitals Excepting in so far as his characters re the same as those of all good doctors (not necessarily he same as good physicians or surgeons) the soldiers' octor is least needed at the base hospital—more in the nit, battalion of infantry or brigade of artillery, and most n the field ambulance, where the C O needs to be a tough ut to avoid his brigade group crumbling away from nnecessary illness Once it is decided the soldier must o down the line his doctor's special characteristics isappear, to reappear in the convalescent hospital or amp In the base hospital he is only needed to prevent he hospitalisation of men (and women and children) hich results from keeping them in unduly long or keepng cases that never should be there The convalescent amp is a hospital, not a training depot where hardening f the fit man is done Hardening of the not yet fit man ay be begun in convalescence , but give them a chance nd the military authorities will expect the convalescent amp to turn out hardened soldiers as well as recovered nvalids If it gets that reputation, M O s will refuse to end out cases and will obstruct seniors when they try o do so Then hospitalisation starts The convalescent amp must therefore remain a medical unit I wonder hether it can take civilians as well as members of the Forces The latter are under military law, and the ormer are not Military law is out of place in the onvalescent stage , but it may be useful in the background Toughness combined with kindness of heart—nd no doctor is any good without both—can do the job without the help of the C O s orderly-room If I am ight, and it is not just an old man's dream, convalescent camps should take civilians (men and women) as well as he men and women of the Forces and treat them all ogether The Pendragons have shown how to make such a dream come true And why does the convalescent camp matter ? Just because base hospitals get cluttered up with men that should not be there , they are not fit for full duty, but they ought not to be in hospital

* * *

The latest edict on a triple ration of fat and meat for diabetics is altogether incomprehensible to my mere medical mind A little mental arithmetic shows that it provides for approximately 135 g (or 1220 Calories) of fat and 60 g (or 240 Calories) of meat daily Most of us who are interested in diabetes are now of the opinion that with a high carbohydrate diet of 200–300 g daily the amount of fat should be reasonably restricted and 100 g daily is about the highest level to which the fat in the diet should rise Why, therefore, the diabetics of the country should be granted such a medically unjustifiably large ration when the children (not to mention the non-diabetic element who are also doing their best to play their part in the defence of their homes) are rationed to the bare minimum of fat compatible with health is one of these problems which, while a headstrong government department may consider it settled once and for all, the medical profession ought to assail with all its power Is it a question of the vested interests of diabetics—always rather a pampered section of the community—or is it an example of our stupid national habit of sentimentalising over the unhealthy to the extent of victimising the healthy ? But, perhaps it is only Whitehall bungling again I have been glancing over the instructions which we issue to our diabetic patients, and for the life of me I can find no reason why they should have any more than a double ration of meat

Professor Mottram's recent letter (*Lancet*, Feb 1, p 159) voices a fear which has been growing in the minds of many of us Article after article of food which the Ministry of Food urged us to eat has disappeared from the shops Cheese was the epitome of all that a foodstuff should be , with cheese as a staple article of food our diet would be satisfactory Those of us who had long believed in the excellence of the traditional English bread, cheese and beer chortled with pleasure, and non-cheese-eaters soon learned the advantages of the habit , but the next thing we find is that cheese has become a rarity only to be obtained if our unfortunate wives pay repeated visits to the grocer To the non-politician cheese seems to be the ideal food for storage purposes, and with the tremendous output of our Dominions available the neglect to lay in adequate amounts of it either before or during the early days of the war seems to be verging on either laxity or criminality Again, there is the latest example of all—oatmeal—announced on the wireless and in the press as *the* food for war-time , and in less than a week not a grain is to be obtained in the shops Why on earth do foodstuffs disappear from the shops the moment their price is controlled (e g onions, poultry, and rabbits), why is food such as meat allowed to rot in the shops until it has to be thrown out as unfit even for pigs, and why are artists appointed regional directors of the meat trade while fully qualified and experienced butchers are sent into the Army to act as infantrymen or clerks ? Doctors are notoriously bad administrators or one would pray for the appointment of a medical food dictator

* * *

There seems to be an all-round drop in the sense of personal responsibility nowadays So much is done for us that we can, if we like, carry on with very little initiative if our ambitions are modest The professional man, depending as he does on his own efforts, has as a rule a well-developed sense of responsibility , the artisan in war-time need have almost none But the professional man can, if he chooses, avail himself of many of the aids which are dangled before the artisan He can send his children to the council school, he can let them take their chances in the examinations for scholarships at the grammar school and university That he does not is his own affair In his actual profession, however, it is not so easy There he must stand on his own feet, must fight with his own hands, unless he chooses to take a state-paid job If he does that, and is content to go with the swim, he need exercise very little personal responsibility His wage will be paid regularly and will increase according to scale He is certain as anyone can be that, well before he is past enjoying it, he will be able to retire on a pension A good many of us must be regarding him with envy today—those of us who are faced with a rapidly declining income, rising taxation, an ever-increasing cost of living In the wage-earning class the average man, woman and young person of today can and does earn a comparatively large wage with little addition to his or her responsibilities The cost of commodities is bigger than it was and is growing, but they are not in plentiful supply, the artisan can and must spend little more than he did on them His rent is not increased as a rule He has no growing school bills to pay He gets his ordinary doctoring through the panel, treatment at the hospital, if he needs it, through a contributory scheme If sick he gets a weekly money allowance from the state insurance, supplemented, if he has made provision, by his friendly or trade society Take it by and long he has little to fear but the loss of his job or a long illness Society has been so organised that his responsibilities have been reduced to a minimum But—and it is a very big but—the war will not last for ever Sooner or later there will come a time when highly paid employment will become not a thing to pick and choose but a thing of the past Then the artisan will find he has responsibilities in bucketfuls So, for that matter, will everyone else

For the moment, however, we are considering things as they are Is well paid, easily obtained, employment a good thing *in itself*? In some ways it is, but not in all It used to be axiomatic that nothing was worth having that did not have to be striven for, and on the whole that is true Today, if works welfare workers and such like are to be believed, some of the younger artisans are becoming increasingly difficult Disputes concerning wages and conditions of employment are increasing, and that often in the best equipped workshops While the older men go on with their work some of the younger ones are ready to down tools with little provocation They know that they can get another job without difficulty This, let it be stressed, is true only of a small minority The great majority are content to carry on, big wage or no big wage, because they know they are needed The spirit of region which administer a civil-defence scheme were invited It was attended by representatives from about half of the authorities of that region, who all explained that they attended in their personal capacity and were in no way mandated by their authorities to express their view The administrative side had a fair representation, there being apart from councillors and engineers some eight medical officers of health and a few members of the E M S The two bodies which combined to call the conference were the Association of Architects, Surveyors and Technical Assistants and the A R P Coordinating Committee, with which Prof J B S Haldane and Prof J R Marrack are closely associated

THE SHELTERS

Medical men are prepared to recognise in an increasing degree that their responsibilities extend beyond the mere treatment of such disease as is brought to their notice by the sufferer himself Today public health is no longer the monopoly of doctors employed by the central ministry and the local governments—indeed, it is these doctors who are the first to stress the fact Today also the general public are being subjected in an increasing degree to new strain all tending towards a general lowering of health standards Dr JOAN MCMICHAEL, starting from this common base-line, addressed the conference on the medical aspects of A R P and quoted from a speech by Mr Malcolm MacDonald in which he commented on the very real dangers to the public health arising from a "degree of overcrowding literally appalling" In support of this Dr McMichael gave the standard minimum figures per occupant which the Public Health Acts allow

Hospitals	1000 cu ft per head
Army barracks	600 " " " "
Canal boats	60 " " " "
" " (children under 14)	40 " " " "

She remarked that these figures read somewhat curiously alongside the report of the Horder Committee "Whenever possible the standard the Ministry of Home Security is at present advising—viz , 50 cu ft per person for indirectly ventilated shelters—might be followed until the present position of overcrowding is eased" As Dr McMichael commented, the population in London which cares to shelter must do so in conditions inferior to those obtaining in a canal boat Dr McMichael, in stressing the reality of the danger, quoted figures for the incidence of cerebrospinal fever 1938, 1288, 1940 (up to Dec 5), 12,500

The general feeling of those present was that the structural and medical problems involved in the provision of shelter were so intermingled as to have become inseparable About this there can be little dispute, though there was considerable argument concerning the official attitude to problems of shelter hygiene, at any rate in so far as planning is concerned As one delegate put it, "The policy of installing medical and nursing staff in shelters without even attempting to remedy structural hygienic faults is a policy of waiting for the worst To provide at the same time bad shelters with efficient medical aid is like throwing banana-skins on to a rush-hour pavement and handing out splints five yards further down"

The general tone of the discussion was extremely critical of the Government's A R P policy It was chiefly the Ministry of Home Security that suffered as being the department responsible for the primary design of the shelters The opinion of the conference was plainly to the effect that no-one could make a sound job of caring for shelterers under the conditions in which the ministry preferred to confine them

The cost per head of shelter accommodation decreases with a rise in the number of persons sharing it Such elementary amenities as water-closets and air conditioning plants have an alarming cost if this is spread over say twenty people , but expenditure falls to a practicable level if spread over several hundreds of users The Ministry of Home Security does not like large shelter units and all attempts to demonstrate the convenience and economy of the larger communal shelter have met with little sympathy Models were shown of large reinforced concrete shelters which have been popularised as "Haldane shelters" As Professor Haldane has pointed out, these shelters are based upon Mr Ove N Arup's designs which the Finsbury metropolitan borough coun adopted as reaching the required standard for a crowd area These shelters are really an aggregation of simi reinforced units so that a high degree of safety is achiev as well as a high level of "amenity" Actually safe rather than decreasing with grouping, considerab increases, since the honeycomb of reduplicated wa has an obvious cumulative effect in isolating the fo of an explosion

THE HOMELESS

One of the paradoxes of the blitz is the plight of th bombed out of their homes It is odd that the homel and the wounded are the two classes of our populati for whom shelter is provided only in the most exc tional circumstances Once in the converted L C school which serves as a rest centre the homeless ha usually to be content for their protection against bom with a fabric designed in the 19th century merely exclude the elements The Rev S EVANS of Plaist urged that those whose homes have been bombed in way deserved to be treated as paupers They w simply citizens deprived of their possessions by disast and who had been through a stiff ordeal As an instan of what not to do he related the history of eighty hum *beings in a rest centre of a county* borough on the E Side of London They were told to wait for a "bus take them to the country" One arrived and deposit them in a borough the other side of London Th they were sheltered in a common lodging-house for weeks and as no further attempt was made to deal wi them they drifted back into their bombed borough, or to crowd to a still greater extent the already ov crowded homes of their relatives It was too much, said, to expect a working-class housewife to search bombed district for alternative accommodation and the same time to look after a family The Governme had made the local authorities responsible for billeti and in view of the machinery at their disposal it shou prove, if resolutely tackled, one of the least diffic war-time tasks

The medical opinion present was against the use relatives' houses for billeting, on the ground that t average working-class house is usually overcrowded begin with A wider use of powers of requisition was adv cated , and it was pointed out that the local rate off always knew of empty premises as soon as they fell vaca

The conference felt very strongly the lack of dir contact with the regional commissioners and passed resolution demanding a right of representation regional headquarters It was pointed out that would benefit by this—the atmosphere at the top wou be less rarefied, local problems would be better met, a the public better served

It became obvious during the course of the day th whatever doctors themselves may think, the pub expects their interest and help in an ever-increasi degree and in an ever-widening field The war h brought to our large towns a new community life which no man can escape his responsibilities towards h fellows The doctor, from the nature of things, touch life at many points and the calls on him are correspon ingly greater Someone summed up one aspect of t medical situation in the phrase "Beat the germs well as the Germans" There are other things to be too, and in planning how they may be beaten it may well to reflect that rugged individualism and anarc are much the same thing—and that as a philosophy f victory anarchy is not to be commended

K W C S-L

As a war-time measure the Hospital for Sick Childr Great Ormond Street, with the cooperation of the Watfo Peace Memorial Hospital, is opening consultative outpati clinics at that hospital At first these clinics will be held o a week beginning on Friday, March 7 Medical and surgi cases should attend at 10 A M and ear, nose and throat ca at noon The clinics will be extended later if necessa They will be conducted by members of the visiting medi staff of the Hospital for Sick Children, and new cases must recommended by a doctor Appointments should be made by letter through the almoner to the Hospital for Sick Children Clinic, Watford Peace Memorial Hospital, Watford, Herts

Letters to the Editor

SULPHADIAZINE

SIR —Recently Roblin and his associates[1] have scribed the preparation of sulphadiazine (2-sulph-lamidopyrimidine) Feinstone and his collaborators[2] ve reported that the acute toxicity of sulphadiazine sed on blood concentrations of the drug was in the ghbourhood of from 175 to 200 mg per 100 c cm the L D 50 in mice Chronic toxicity studies on nkeys showed that sulphadiazine produced less tissue mage than did sulphathiazole or sulphapyridine, and e blood concentrations of the drug resulting from given ses of sulphadiazine in monkeys and in mice were out four times as high as those resulting from similar ses of sulphapyridine or sulphathiazole They noted at the drug existed in the blood primarily in the un-njugated form because its acetyl derivative appeared be readily excreted in the urine These observers ted that sulphadiazine had an excellent degree of erapeutic activity in experimental pneumococcal, emolytic streptococcal, staphylococcal, and Fried-nder's bacillary infections in mice

We have been able to confirm these observations In fections in mice, our experiments lead us to believe at sulphadiazine is approximately as active a thera-eutic agent as is sulphanilamide in streptococcal infec-ons In experimental pneumococcal infections in ese animals, sulphadiazine again proved to be about as ffective as sulphathiazole or sulphapyridine In experi-ental staphylococcal infections, sulphadiazine seemed be slightly superior to sulphathiazole as a therapeutic gent

In infections in mice produced by the intramuscular jections of *Clostridium welchii* or *Cl septique*, sulpha-iazine was highly effective when administered either y the oral or local route None of the drugs which we ave tested has proved very effective against *Cl edematiens* (*novyi*) infections in mice

Our studies on the absorption, distribution and excre-ion of sulphadiazine in man indicate that the drug is omewhat less rapidly absorbed from the gastro-intes-inal tract than is sulphanilamide, sulphapyridine or sulphathiazole In the blood, the ratio of the unconjugated and acetyl fractions of the drug is frequently less than that which has been previously noted for sulphanilamide Sulphadiazine is excreted less rapidly than is sulphanilamide or sulphapyridine if renal function is normal In the urine about a third of the drug exists in the acetylated or conjugated form The relatively small amounts of the conjugated fraction found in the blood seems to be due to the fact that acetyl sulphapyrimidine is readily excreted by the kidney The drug passes over into the spinal fluid in concentrations of one-half to four-fifths of those which exist in the blood

It is too early to pronounce on the clinical therapeutic effects of sulphadiazine, but to date our experience with this drug leads us to believe that it is about as effective as sulphapyridine or sulphathiazole in the treatment of pneumococcal pneumonia in human beings and of definite value in the treatment of hæmolytic streptococcal and staphylococcal infections in man In Friedländer's bacillary infections it has proved very effective

The interesting thing about this drug is that it has not in our experience (which now covers its administration to about 80 patients) produced any nausea or vomiting We have noted one instance of drug fever, one of drug rash, and one of conjunctival injection in this group of patients The drug does not produce a fall in the carbon-dioxide combining power of the plasma, nor have we witnessed any signs of renal injury up to the time of writing There have been to date no noticeable changes in the red-cell count or hæmoglobin of patients who have received this drug

It is very easy to obtain adequate concentrations of this drug in the blood, and we feel that in the acute phase of lobar pneumonia a concentration of sulphadiazine of from 7 to 10 mg per 100 c cm should be maintained It has been our custom to prescribe an initial dose of 4 grammes of sulphadiazine, to be followed at six-hour intervals by 1 g of the drug; then 1 g should be administered every six hours until the temperature has been normal for three days

If the initial promise of high therapeutic effectiveness and low clinical toxicity of this drug is borne out by more extensive experience, it means that sulphadiazine will be a most welcome addition to the sulphonamide group of chemotherapeutic agents PERRIN H LONG

The Johns Hopkins Medical School, Baltimore, Maryland

ARTIFICIAL SHORTAGE OF DOCTORS

SIR,—With reference to your leading article of Feb 1 on the artificial shortage of doctors, I would ask you to correct a statement regarding orthopædic centres in the Army, which is not in accordance with the facts It is stated in this article that " the Army has 12 orthopædic centres in addition to those of the E M S, with their own establishments to maintain " The facts are that a number of surgeons with orthopædic training and experience have been authorised for certain military hospitals at home These hospitals will be regarded as possessing orthopædic sections (not centres) and are supplementary to the E M S orthopædic centres It is not intended that cases requiring highly specialised reconstructive surgical treatment, or whose return to military duty is doubtful, should be treated in military hospitals These are to be transferred to E M S orthopædic centres as early as possible The Army are not calling for occupational therapists and rehabilitation experts from civilian sources J M WEDDELL,

War Office, S W 1 Colonel Consulting Surgeon to the Army

SIR,—In reception areas, where the population has recently increased by 50–100%, doctors are still being removed and commissioned in the R A M C —a sentence to boredom, censoring, deciphering, &c Surely evacuees and the normal civil population deserve more consideration than this It seems that a request for exemption is likely to be granted until the end of this winter only —which to my mind is a very short-sighted policy

It is up to everyone to serve the country to the best of his ability, and it would appear absurd to join the R A M C where (to quote a phrase from Mr Handfield-Jones's letter) " there are lots of us here and nothing to do " rather than to stay in general practice where there is an increasing amount of work to do and an ever-decreasing number of doctors to do it Is it not time that this should be rectified before the general practitioners' work becomes too great and the civil population suffers ?

Gt Berkhamsted Herts C CARTER SHAW

SIR —I agree with you that pooling of the supply of doctors is necessary, and I would suggest (1) that all medical men more than three years qualified should be called up by age-groups to the age of 50 and placed in that pool so as to be available for whatever service—fighting or civilian—most needed them , (2) that in the fixed and mobile A R P posts all doctors under 40 should be replaced by those over that age and by part-time general practitioners , (3) that all public-health appointments during the war should be held by men over 50, and that these appointments should be freed for the time being from the provisions of the local government and sanitary orders MEDICAL PLANNING

SIR,—I have read with interest the letter from Mr Handfield-Jones in your issue of Feb 8 As he says, the Army Medical Service is reluctant to reveal the voracity of its appetite for medical officers, but this extravagance is undoubtedly the basis for the present shortage. Rumours now reach us that there is to be another call-up of medical men in the near future At this time of year, in particular, further conscription will lead to very grave difficulties, more especially in areas where the civilian population has been increased and the medical population diminished Unfortunately the British Medical Association, which one might have expected to emphasise the hardship to the community and to the elder doctors left behind, appears no longer to be the champion of its members, but rather the handmaiden of the Ministry of Health, and there is little help to be expected from that quarter

A further point which should be noted is the serious patriotism is a very real thing, but there are men, usually quite young, in whom it does not burn so brightly Why is this ? The same process is at work here as in the increase in juvenile crime, which a peripatetic correspondent of Feb 1 put down largely to irresponsibility Just as children and young persons commit antisocial acts from thoughtless selfishness, so the young men, having had so much done for them, have never even begun to think in terms of other people In taking anything that strikes their fancy children do not consider the point of view of the owner Indeed, when the question is asked in the juvenile court, "How would you like it if somebody else had taken *your* things ?" the answer "I shouldn't" has been given as apparently something quite fresh Perhaps our system of education is to blame, by concentrating overmuch on purely material things In our elementary schools everything that will add to the material comfort of the children is being supplied in abundance—the class-rooms are well lighted, well spaced and airy, the furnishing is almost more than could be desired The lavatory accommodation is adequate, so are the playgrounds But is there something lacking ? The average healthy child used to prefer toys of his own devising to anything that could be bought Half a dozen old soap boxes, an imperfect box of battered bricks, were of more permanent value to him than any mechanical toy simply because they enabled him to employ his imagination The bricks would be anything from a medieval castle to a locomotive engine within half an hour, and next day they would be something quite different Are our modern methods killing that sense of imagination ? Are we taking from the children something we can never replace, and, if so, are not we responsible for much which we deplore ?

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[1] Roblin R O Jun Williams J H Winnek P S and English, J P *J Amer chem Soc* 1940, 62 2002

[2] Feinstone W H Williams R D Wolff R T, Huntington E and Crossley M L *Bull Johns Hopk Hosp* 1940, 67, 427 Annotated in the *Lancet*, Feb 15, p 217

Our opponents in this war have made it abundantly clear that they are out for world domination, for the trampling down of any who get in their way They really have much the same viewpoint as the irresponsible child—the entirely selfish one—and this outlook is fostered in Germany by neglect of everything that stands for self-reliance There everyone follows his leader, he is forbidden to think for himself, he is not even allowed freedom of thought The result is woefully apparent—a war machine which has proved its deadly efficiency But it is merely a machine, it lacks individuality and sooner or later it must break Men and women may be personally irresponsible for a time, but not for always

We may see something of the shrinking from responsibility in the practice of our own profession, particularly if we live in or near a town with a hospital A generation or so ago most of us had to depend pretty much on ourselves There were few outside aids A well-equipped laboratory was a rarity, X-ray machines were not common, and certainly were not within easy reach For diagnosis we relied on ourselves, and the evidence we were able to collect by the use of our developed senses Who does that now ? If we are in any doubt, and often when we are not, we send our patient off to this or that expert at the hospital for an opinion The opinion may be valuable, but the effect on us and on our patients may be less so For only too often we have not so much shared our responsibility as passed it on The average young doctor is well up in modern methods of diagnosis and treatment but is shy in applying them himself How many town G P s ever treat a fracture right through ? How many so much as see a case of V D ? Thirty years ago, and less, every G P felt himself competent to tackle pretty nearly everything, and *was*! Today he does not think so, and consequently plays for safety That, not infrequently, is a highly dangerous thing to do

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We don't consider ourselves hardworked these days, far from it, but the usual early morning muster at sick bay keeps us pretty busy while it lasts The accepted Service idea of treatment involves seeing as many patients as possible in unit time, and delays are frowned on despite the fact that both we and our staff are largely unoccupied during the remainder of the day Thus when one day, in the middle of my list, my chief sick-berth attendant announced that the next patient was a Pole I was none too pleased, my linguistic accomplishments being limited, and I foresaw a long and tedious discussion However, in he came, a tall and well-built fellow with a charming and apparently permanent smile, his uniform smart and clean and his whole appearance most impressive He halted before my desk, clicking his heels with a sound like a whip, gave a slight bow from the waist and then relapsed into a silent immobility, obviously intending me to take the initiative I was rather taken aback when my opening sally "What is your complaint ?" spoken very slowly and deliberately, brought forth a volley of mangled Anglo-Polish which was quite unintelligible Evidently flattered by the assumption that he spoke English, he was making the most of the opportunity This flow was stanched with difficulty, and after a short and awkward pause my "chief" whispered "They usually understand French, Sir!" *I choked back the retort that* unfortunately I didn't, and delved into my hazy memories of lessons at which I learned a maximum of French grammar and a minimum of idiom Tentatively I tried "Qu'est ce que vous avez ?" to be rewarded by an intensification of the smile and another excited torrent of speech in what was presumably a second national language to him This also left me cold, so once again an impasse was reached Just as I was about to eat humble pie and demand an interpreter he suddenly said, in good and precise English, "I have " and then stopped As this was the first lucid expression I had received I leaned forward eagerly "Yes ?" I said, hoping to hear his symptoms, at last "I have " (there was a slight pause while he fumbled in his pocket and brought out a small red book) "a dictionary!" and he looked enormously pleased at having remembered the word and its pronunciation The book was rapidly thumbed and a large forefinger pointed to an astonishingly unpronounceable word against which was the English equivalent "itch" While I digested this information he rapidly stripped and displayed a sweat rash of the groins, and uttered what I took to be the word he had just showed me Not to be outdone, I commandeered the dictionary, found the English-Polish section and rapidly ran through the pages until I found the Polish equivalent of "sweat" which was some curious word like "pog" "Pog," I said, and again there was a pause, while I considered in which language to put my transitive verb At last, in desperation, I said firmly, "Pog makes " (a sort of strangled cry followed as I attempted the Polish word for itch) I looked up expecting incredulity, even indignation, but it had worked! He was delighted at this simple explanation—having evidently expected a diagnosis of tinea or pediculosis, both of which being pretty common at the time—and departed with yet another shattering heel-click But not before I, in my new burst of confidence, had sunk so low as to say "Fini"! After this brilliant success I bravely faced the next man—a French rating—with "faites voir," to his profound amazement, for his English had been more than adequate on previous occasions

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If an analysis was made of papers read before the provincial medical societies I fancy it would transpire that most of them are contributed by the staffs of hospitals and specialists The general practitioners may complain that these, while serving as a modest advertisement to the contributors, do not help them much, and the society's secretary that he cannot get papers from them How are we to tap the vast clinical and therapeutic experience of general practitioners ? They see after-results from their own practices and—an important point—cases returned "cured" from all kinds of hospitals Here they seem to be in an unique position Yet our two leading weeklies and two German ones which I read contain but little of their writings I should like to see occasional numbers of these given over chiefly to contributions from the "backbone," or perhaps an occasional supplement Or general practitioners might arrange to support representatives of their number, with the requisite attributes, relieve them from practice, and set them to edit a monthly journal controlled and maintained by the practitioners, solely for contributions from their experience

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Since the publication of the last list of subscriptions to the Medical War Relief Fund £800 has been received, bringing the total to over £17,000 practitioners" It would almost seem that there remain only the questions of when and in what form a whole-time general practitioner service should be introduced

Sevenoaks GORDON WARD

SIR,—I profoundly disagree with propositions 2 and 3 of Dr Everard Williams's letter on the future of medicine He advocates the setting up of official contraceptive clinics, but contraception is an important factor in the falling birth-rate of the country and provides a means of avoiding family responsibility Yet in proposition 4 Dr Williams advocates family allowances Proposition 3 represents an attack on individual rights The principle carried to its logical conclusion would condemn to death all those who are of no use to the state, and it is precisely against such principles of state worship that we are fighting now Either there are rights attaching to the human personality, or the personality is to be at the mercy of an omnipotent state One such right is surely that no innocent life shall be forfeit, and this plies equally to the unborn child and the mentally fective The study of the hereditary factor in mental fect or disease is still in its early stages, our present owledge does not justify us in interfering with human ghts This does not mean that I approve of the state ending *30s* a week to maintain an imbecile child d only *5s* a week to support a healthy one, we must ep a sense of proportion But in any case the comarison is not a fair one, many mentally defective atients do useful work when gathered into a community d thus in part support themselves

On what grounds does Dr Williams induce abortion a case of rape? Is it on account of the danger to the ealth of the mother especially if she is young, or is it ecause it is feared that the child will be born with hysical or mental defects? A recent publication by r Letitia Fairfield reviews about 74 cases of juvenile arturition, some of which were presumably the result f rape It showed that there was no maternal mortality, ut the forceps rate and puerperal morbidity rate were lightly increased over the normal rate Half the infants veighed less than 7 lb at birth, 18 were premature, 5 vere stillborn, and there was a high incidence of congenital defects 2 cleft palates, 1 anencephalic fœtus, inguinal hernia and 1 slight talipes These figures urely, on medical grounds alone, do not justify therapeutic abortion

The changes advocated by Dr Williams are in conflict with the moral law, and where there is conflict between that law and medical therapeutics we can be reasonably certain that bad medicine is being advocated

Southern Hospital Dartford A D WILLIS

TREATMENT OF WAR NEUROSIS

SIR,—There are points in Dr Dillon's letter of Feb 1 which I should like to try and answer

Dr Dillon asks by what criteria an assessment of the personality can be made before disposal In the vast majority of cases the main criteria are the reactions of the individual to danger—not only his reactions to current dangers, such as any form of enemy action, but his reactions to danger real or imagined throughout life What is the history we obtain so frequently from men who, in my opinion and that of others, must be discharged? Throughout life they never lived dangerously, have avoided any threat to their security A nervous childhood, mother-fixed, regarding the outside world as full not of wonderful things to be enjoyed but of dangerous things to be avoided They have never climbed a tree, never played football, never fought a fight For them throughout life fear has always meant flight, they have lived their days not endeavouring to tolerate anxiety but avoiding it Quite possibly there may have been no overt neurosis before joining the Army because they have so planned their life as to avoid the conditions which would produce anxiety I do not believe that this type is amenable to psychotherapy because there is no real desire for it, they have found a ring fence within which they can be reasonably content and they only desire to get back within it again They may even as civilians avoid a breakdown under enemy action because they can either flee or remain immobile in a shelter, but when in the Services they cannot obey their instinctive reactions to danger they break down They may have had reasonably well-paid but sheltered occupations, or they may have been content on the dole or receiving public assistance, or content to drift from casual ward to casual ward. In all there is the same basic mechanism of flight from any threat to their security Most of us will agree that these are not the cases which fill our psychiatric clinics in peace-time They have made their adjustments, and only war with its threat to personal safety breaks down the barriers they have built

This war is different from the last, particularly because recruits are exposed to the threat of enemy action probably as soon as they join the Services, and may even have been exposed to it before There are not the chances as in the last war of getting training, discipline and some possible building up of aggression or ideals of service before being exposed to the threat or reality of danger Many of the cases we are now seeing have only been a few weeks or months in the Army, from the beginning they have reported sick whenever possible, may have never fired a rifle, and no instructor would trust them with one I do not believe that there is any great number of these cases in proportion to the number of the present intake into the Army, and I am sure they must exist in any conscripted army of any nationality They must, however, come into the net of the neurosis centres, and those of us who work in them may be depressed at times by their numbers

I should be the last person to belittle the use of psychotherapy, but there must be something to build on, some real desire not only to be symptom-free but to meet and stand up to war service conditions Discharge rates are not very satisfactory, but will be more so when the present system of following up has brought replies from units A neurosis centre has a net with a small mesh and brings in not only anxiety states and hysteria but also epileptics, mental defectives, psychopathic personalities and others I quite agree with Dr Dillon that many neurotics have made good soldiers, but they are different in the type of neurotic mechanism from those I have referred to I think I can assure Dr Dillon that psychotherapy is still being used in suitable cases

MAURICE B WRIGHT,
Whitchurch Psychiatrist, E M S

A BLASTED HORSE—AND OTHERS

SIR,—The article on what a layman may call a shell-shocked pheasant in your issue of Feb 8 suggests that similar particulars may be of interest in the case of a horse

Idol, a very good dray-horse, six years old, had been working for eight months for a London brewery Last autumn, at 4 A M, a heavy H E bomb demolished a building and twenty houses about eighty yards from the stable, which is on the ground floor Intervening houses prevented any damage being done to the building, except a skylight, but of course there was a terrific bang and concussion Fourteen horses, then probably all asleep, were all right except for being frightened and restless Idol and another lay unconscious The other (aged eleven) recovered in two hours, and with massage treatment was at work forty-eight hours after, and has suffered no permanent ill effect Idol lay as dead for over four hours, with such a slow pulse that the stable foreman decided it was hopeless and the humane killer was brought to kill him Suddenly he shivered all over and got up, but could not use his hind quarters to walk Fomentations and massage were applied and a week after he was able to do light work, constantly needing rest days but working four days out of six There was slight lameness in the hind quarters

Three months afterwards there was a direct hit on the same stable, killing two horses outright The remaining twelve were able to walk out and most were at work that day Idol had a bad relapse, and now a month later is little better He cannot back and finds difficulty in turning, the symptoms being paralysis along the spine It is feared there will be little more work for him in London, though it is intended to give him six months' rest at grass during the summer, in the hope of a cure

Other animals in a country district were affected after land-mines had been dropped The rabbits—even in their holes—suffered from shock and hopped out of them aimlessly and could be picked up by hand The cows similarly behaved in a dreamy way, refused to eat and had to be slaughtered

Ware, Herts H F BUXTON

position arising from the fact that many medical men in the Services are getting out of touch with medicine, and deprived of clinical work will get increasingly rusty as the war goes on As one ex-house-surgeon writes to me "One is a mixture of clerk, soldier and first-aid man, in that order" The remedy would appear to lie with the Army Council, who should no longer insist on a medical officer to so many men, for units stationed in this country, but should allow local doctors in many areas to do the half-hour morning sick parade, all more serious cases being sent to hospital as at present

Lincoln G A **Bagot Walters**.

PAUL-BUNNELL TEST IN GLANDULAR FEVER

Sir,—I agree with Professor Himsworth when he says in his letter of Feb 8 that careful record-keeping is necessary so that we can find out if the Paul-Bunnell reaction is specific for glandular fever and if we must classify separately similar syndromes with a negative reaction But I don't think he will obtain the distinction he wants if he uses monocytosis as a criterion The blood picture of glandular fever is highly characteristic and four groups of cells among the increased mononuclears can be distinguished

1 Typical lymphocytes
2 Typical monocytes
3 Plasma cells and large cells with dark basophilic cytoplasm probably related to plasma cells, these include the "Turk" cells
4 Cells which resemble monocytes but do not have lobed or indented nuclei, these cells have been classified by various authors as lymphocytes, monocytes, glandular-fever cells, or simply as abnormal mononuclears, they are very characteristic

The proportion of these groups varies in every case, but group 4 is always prominent It is this composite picture that is so typical of glandular fever, and not the presence of any particular monocytosis or lymphocytosis Neither Dr Barber nor Dr Fuller gives clearly typical differential white-cell counts, probably the class of lymphocytes includes atypical forms Monocytosis is known to accompany infections of the mouth and throat unaccompanied by general symptoms like those of glandular fever (e g Hartfall 1934), and a point that suggests that Dr Fuller's patients had not got glandular fever is that the sternal marrow in one case was unaffected In the few patients I have examined the marrow always contained cells of groups 3 and 4 and increased percentages of lymphocytes and monocytes This may be helpful in differentiation

With regard to technique, a staining combination including Giemsa gives the best results, supravital staining unfortunately gives no more help than this in classifying the abnormal mononuclears.

In the meantime it is probably best to follow Dr Fuller's example and not report cases as glandular fever if the Paul-Bunnell reaction is negative

M C G **Israels**

Research Department, Manchester Royal Infirmary

ENDEMIC FLUOROSIS

Sir,—In your leader of Feb 15, it is stated, in reference to mottled teeth, "The discoloration appears as opaque white or brownish patches on the enamel and is likely to occur in those who drink water containing more than 4 5 parts per million of fluorine" Since this might give the impression that water of less fluorine content is unlikely to cause mottled teeth it should be noted that there is considerable evidence (mostly American) that drinking water is safe in this respect only if it contains less than 1 part per million of fluorine I have estimated the fluorine content of numerous water-supplies in Great Britain, and I consider that the limiting figure for drinking water-supplies of 1 part per million of fluorine should provisionally be accepted

Victoria Street, E C 4 E V **Suckling**

THINGS TO COME

Sir,—May I offer for the consideration of those who would plan our future some reflections upon 1364 expressions of opinion which lie on my desk? They are some of the replies received by the Medical Practitioners Union to its scheme for a national salaried service for general practitioners This scheme was circulated to every doctor in the country and their opinions were invited by the provision of a blank sheet with the caption "I am / am not in favour of the principles underlying this memorandum and offer the following criticisms" The replies with which I am dealing were analysed several weeks ago but others which have come in since seem to be very similar in character We may therefore take it that the 1364 opinions, less 71 which were indefinite, are likely to afford valuable and reasonably accurate evidence of what medical men are thinking today There were 849 replies in favour of a whole-time service and 444 against This is an impressive majority but it nevertheless conveys an inaccurate impression By the mysterious operation of human fallibility the memorandum failed to suggest any compensation for the capital sunk in practices and this was very alarming to those who had purchased, or were still purchasing, shares in established practices Many of these recorded a vote against the scheme on no other grounds, although it was quite clear from their other comments that they were not at all opposed to the principle involved The confusion between principle and detail was seen also in other replies, and I think it would be an understatement to say that no less than 75–80% of those who expressed an opinion were willing to accept the principle of whole-time salaried service

What has caused this great departure from the traditional attitude of the profession? I think there can be no doubt that the National Health Insurance Acts are in great part responsible, although economic facts have been of decisive importance Insured persons have not shown themselves particularly grateful for the services rendered by doctors, and have been increasingly ready to call them out at any time of day or night with little regard to the real needs of the case Doctors are also forced to make many millions of visits a year for no better purpose than the giving of certificates on some one particular day convenient to the agents of approved societie These are two examples of a type of demand which has upset the old balance between doctor and patient The latter now expects as his right (backed by disciplinary measures) the sort of service which he formerly accepted with gratitude and repaid with some degree of consideration for his doctor It is possible that I have put this too strongly, but I think it is largely the burden of such service that causes so many doctors favourable to the scheme to harp on the need for settled hours, days off, and regular holidays without the expense of providing a locum It is scarcely necessary to say much of the economic factors which bear so hardly on general practitioners Every doctor knows that the low insurance fee and the ever-increasing encroachment of state services have been powerful factors in turning men's minds towards the advantages of a regular salary with a pension to follow It is in the light of such considerations as these that we must weigh the hundred or so replies which insist that the individualistic type of practice has the great advantage of involving competition, and allows a practical idealism which, they say, is unlikely to flourish under a state system These replies come mostly from the older members of the profession They do them honour, for they are prompted by memories of lives spent in exacting and unselfish work of a sort for which no praise can be too high It will be generally agreed that we must strive to carry over these ideals into a state service, but to the more modern mind ideals alone are not enough and we have to realise that the full advantages of medical knowledge can no longer be brought to bear by isolationists A new generation has come into being, neither better nor worse than the old, but forced by circumstances to think and to work along different lines In the medical world it is the line of coordinated state service which has now the most followers, and those who plan for the future must take account of this fact, in its ethical as well as its practical aspects

There is undoubtedly a widespread revolt against general practice as we know it today How extensive this has become may be judged not only from the general tenour of replies received but also from the following opinion expressed by a teacher not unknown to fame "As a general outline of the new service your summary is excellent, and my teaching experience of 35 years amongst medical students convinces me that it will be whole-heartedly

Diphtheria Immunisation in Scotland

Mr ALFRED EDWARDS asked the Secretary of State for cotland how many cases of diphtheria in immunised, and on immunised children, respectively, were recorded in the unty of Aberdeen in the years 1938, 1939, and 1940, and hether any of these were fatal —Mr T JOHNSTON The quired figures are —

	1938	1939	1940
iphtheria in non immunised children —			
Cases	186	149	114
Deaths	11	7	3
iphtheria in immunised children —			
Cases	42	16	7
Deaths	*0*	*0*	*0*

Mental Hospital Staff

Mr V MCENTEE asked the Minister of Health in what rcumstances attendants at the Rampton Mental Institution ere required to work approximately 113 hours a fortnight, ncluding meal times, as against the 88 hours per fortnight quired of the staff at Broadmoor Criminal Lunatic Asylum —r BROWN replied I am making inquiries

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Obituary

WILLIAM BULLOCH

M D , LL D ABERD , F R S

To many the death of Professor Bulloch, the historian f bacteriology, is the closing of an epoch, for he was a link ith the great pioneers of that science and his remarkable emory and sense of the dramatic and ludicrous enabled im to discuss its historical figures as though he were ne of them History was his abiding passion, but not so much the history of trends or events as of individuals He was acknowledged master of the bacteriological "conte drolatique," but as his scholarly and critical "History of Bacteriology" showed, he could also tell a sober story well

Russell London

William Bulloch was born in Aberdeen in 1868 and died in the London Hospital on Feb 11 after an operation. He was educated at the grammar school there and at the university, and after graduating in medicine with highest honours in 1890 he visited several continental centres of learning studied under Robert Koch, and finally returned to London to work at King's College Later he was appointed assistant professor of pathology at University College and bacteriologist to the Lister Institute In 1897 he was offered a chair of bacteriology and went to complete a brilliant triumvirate at the London Hospital, where Leonard Hill was already ecturing on physiology and Arthur Keith on anatomy For the rest of his working life Bulloch remained faithful to the London, although his wide knowledge and his transparent honesty caused him to be invited elsewhere to fill important positions of trust Thus he was chairman of the governing body of the Lister Institute, he was an original member of the Medical Research Council, and hairman of the committee which prepared its System of Bacteriology in 1930–31, he was a member of the Government's foot-and-mouth disease committee, he examined for the universities of Aberdeen, Leeds and Liverpool Yet at the many committees he attended he seldom took an active part in a discussion—it gave him pleasure to sit and study his colleagues Though without personal ambition he received many honours, he became a fellow of the Royal Society in 1913, he received an honorary degree from his alma mater in 1920, he was Dobell lecturer to the Royal College of Physicians in 010, Tyndall lecturer to the Royal Institution in 1922, and Heath Clerk lecturer in 1936 On these last lectures his history of bacteriology, published in 1938, was based

Yet with all this Bulloch remained to his students the most accessible of men and the picture we reproduce here will remind them of this middle period of his career One of these students has recalled how on his door there hung perpetually a notice "This is my busy day," but, he goes on to say, "this neither kept Bulloch in or others out, for he was the most communicative of men, ready to exchange ideas or tell a story Afternoon tea in the laboratory was a feast of badinage, reminiscence and kindly mimicry, and his dinner parties at home were gastronomic and intellectual banquets not to be forgotten The art of medicine exasperated him—it was too hit-or-miss for his scientific taste—and he professed a supreme contempt for clinicians and clinical medicine, but when anyone near to him showed the least sign of ill health he would urgently summon the best available clinical opinion" Summing up as a contemporary and countryman, Bulloch's personal qualities, R H writes "A shrewd judge of human nature and intensely interested in the foibles and vagaries of his fellow men (indeed, something of a gossip) and gifted with a dry Aberdonian humour and a caustic wit, Bulloch had an immense fund of amusing, if not always strictly accurate, stories which he poured out with an admirable power of mimicry His shafts, however, were always directed against pretentiousness and humbug in any form; real merit he never failed to recognise and encourage Ill health clouded his last years and dimmed his spirit, but those who knew him at his best will always remember him as a man of the highest scientific ideals and a warm-hearted, witty and entertaining friend"

Another personal tribute is from one who collaborated with Bulloch in his important work on hæmophilia:

"Those who were Bulloch's pupils or assistants can put it on record that though he did not figure to a notable extent in any great advance in knowledge, though he was not in the ordinary sense a notable teacher, nor administrator, nor man of affairs, he nevertheless exerted a great influence on the development of bacteriology in this country Indeed most of his pupils derived sufficient from him to rise to positions of which he was proud Bulloch was not only honoured in his own country. He was the respected and intimate friend of many of great repute abroad When I visited Ehrlich during the '606' boom, after handing in my card with Bulloch's, I was shown into a waiting-room full of dejected visitors I had hardly sat down before the door was flung open and a little man burst in and cried, 'Who comes from Bulloch?' He spent an hour with me before attending to his other visitors

"It is difficult to analyse the route by which Bulloch's influence spread He had himself no passion for research and sometimes gave the impression that he did not appreciate it; but those who knew him well came to learn that his lack of enthusiasm was due to his native caution He had a knowledge of the literature so profound that he required very strong evidence before he accepted a current piece of work as novel If sometimes in his earlier days his criticisms were devastating, they at least reduced the number of one's errors and promoted one's successes He was a good director in that he was a good and trusted umpire Even when we had left him and were getting a bit senior ourselves, we were often surprised at his knowledge of what we were doing That we remained in his mind was often brought home to us when he told stories of our early eccentricities and improved them in the passing years In his earlier period when he was defending with heat a new subject which sometimes challenged vested interests, he was apt to take dislikes to people, especially those in authority whose duty it is sometimes to take ruthless decisions But during the last twenty years of his life, with a happy marriage, he developed a serenity of outlook which gave great pleasure to his friends because they thought he deserved it"

P F

DR WILLIAM TAYLOR DOYLE ALLEN, a well-known Liverpool general practitioner, died at Heswall, where he had gone to live after his retirement from practice consequent upon a serious illness He qualified in 1895 as M B R U I, and became resident medical officer of the Parish Infirmary at Liverpool He later held the post of assistant surgeon to the now defunct St George's Hospital for Diseases of the Skin, and was physician to the Liverpool School for the Blind For many years, until he retired, he practised in Mount Pleasant He was a sound family doctor, genial and friendly and with a quiet humour which made him good company He leaves a widow and one son, who is studying medicine

Parliament

No issue of domestic politics has excited more bitter controversy in recent years than the means test applied to applicants for unemployment assistance or supplementary pensions It was natural that in the new atmosphere of the political truce, inaugurated last year by the accession to office of a National Government including most of the leaders of the former Labour Opposition, an early effort should be made to remove this serious stumbling-block to real national unity The result was a compromise, which while still retaining a means test represents an honest and sincere attempt to get rid of the principal objections raised to its application On Nov 6 of last year Mr Churchill gave a pledge to the House of Commons which has since been embodied in legislative form under the title of the Determination of Needs Bill This measure came before the House of Commons last week for second reading How well its draughtsmen had interpreted the Prime Minister's pledge was shown by the welcome which the bill received from all parties It was generally agreed that the Chancellor of the Exchequer was quite justified in describing the bill as "a far-reaching reform," and in recommending it as "an important mark of our confidence in the final issue of the present struggle and of our determination not to be deterred from continuing to the limit of our ability to improve the conditions of the people" Sir Kingsley Wood explained that the first part of the bill was designed to abolish the household means test and to make the test one of personal need based on certain principles which had been indicated The other part of the bill, he said, gave effect to the undertaking given by his predecessor, Lord Simon, in relation to war savings and contained certain modifications of the previous proposals to meet objections which had been advanced Sir Kingsley Wood made it clear that the intention was to confer the benefit exclusively on the war saver, since the incentive would be gone if the provision applied to savings made at any time But in order to meet genuine misunderstandings about the pledge the Government had decided that, while the distinction between war savings and other savings should be retained, the date at which it would be possible to transfer pre-war savings into war savings would be advanced to Aug 14, 1940 The overwhelming majority of members, including the Labour Party, gave the bill their blessing Mr Pethick-Lawrence, a doughty critic of the means test in the past, voiced the opinion of the bulk of the Labour members that the bill went a long way to meet their wishes "It is an immense change," he said, "and constitutes immense progress" It shifted the obligation to look after those who were old or out of work from the family and the household to the community as a whole Mr Pethick-Lawrence vigorously denounced the action of certain members of his party who had put on the order paper an amendment which he said would have the effect of wrecking the measure He twitted the sponsors of the amendment with wanting to pose as champions of the oppressed, while in fact they were playing politics and doing their best to sabotage an agreed compromise solution of a complicated controversial question He called on those who had the welfare of the unemployed and the old-age pensioners at heart to disown the amendment and support the second reading Mr Graham White, speaking for the Liberal Party, also agreed that the bill would bring great benefits to a number of people while it would injure none At the same time he warned the House that a resurvey and recasting of our social services would be one of the most urgent tasks of the post-war period The main argument of the malcontent Labour minority who supported the amendment was that the bill failed to give full effect to the Prime Minister's pledge Mr Ernest Bevin, the Minister of Labour, wound up the debate for the Government with a vigorous speech in which he stoutly denied that there had been any breach of faith This point of view was amply confirmed in the division lobby where the critics could only muster 19 votes against 173 in favour of the bill

Universities and War Damage

The position of the universities and other institutions which suffer war damage was raised at the committee stage of the War Damage Bill in the House of Commons on Feb 11 Mr K W M **Pickthorn** moved an amendment exempting "bodies of persons (whether incorporated or not) who occupy premises for, or in connexion with, the advancement of religion, education, science or research," from compulsory insurance under the business scheme of the goods on their premises but leaving them free to do so if they wish He said that the bill attempted to distinguish between assets held for business purposes and assets held for domestic purposes, or for the purposes of living rather than of earning a living The peculiar difficulty of the universities and colleges was that they were both a kind of home and a kind of business No-one suggested that chattels which might be described as luxuries or amenities should be restored until the country had fully recovered from the war, but, so far as natural resources permitted, it was desirable that chattels without which the nation could not continue should be replaced —Sir W **Jowitt**, solicitor-general, said he could not accept the amendment on principle It seemed to ask that a university should be regarded as carrying on business, and the Government thought it undesirable to exempt from compulsion persons carrying on business and to allow them to pick and choose what goods they would insure He agreed that the objection did not apply so strongly to universities as to ordinary businesses, and the Government would use their powers under clause 45 to exempt certain classes of the non-essential equipment at universities which would have to be very carefully defined The Government would no doubt seek the help of the universities themselves —Mr **Edmund Harvey** said that the assurance given by the solicitor-general would give real satisfaction to the universities, but he regretted must be regarded as business concerns It was true the universities received help, but every student more than the value of his fees The universities carrying on at a great loss and were only able to do through benefactions and grants The amendment by leave withdrawn

QUESTION TIME

Financing of Rest Centres

Dr H B **Morgan** asked the Minister of Health, with ence to the departmental circular No 2154, what was policy of his department with regard to the rest centres ready for use by homeless persons in cases emergency through enemy action, and whether authorities would be reimbursed expenditure for services as heating, caretaking, and maintenance staff, if, in their discretion, staff for this purpose was considered necessary in rest centres —Mr H **Holdsworth**, Lord of the Treasury, replied A circular was issued to county councils and county borough councils on Feb 6, informing them of the Government's decision to reimburse public assistance authorities the whole of their approved expenditure, from the inception of the scheme, on providing at rest centres for the immediate needs of people who are made homeless or leave their homes as a result of enemy action A large measure of discretion has been allowed to local authorities in providing for this service and approved expenditure for heating, caretaking and maintenance staff, would be included in the reimbursement

National Health Insurance Benefits

Mr F **Collindridge** asked the Minister when it was proposed to give to the House a report of the examination referred to in his speech, on Oct 17, 1940, that Government departments had been making into health insurance and associated questions —Mr **Ellis Smith** asked if he was aware of the extreme urgency of the need to increase the benefits payable under the National Health Insurance, in particular, sickness, maternity and disablement benefits by what amounts it was intended to increase the benefits and if he could make a statement on the matter in view of the urgency —Mr G H **Oliver** asked whether he was aware of the hardship suffered by persons in receipt of disablement benefit paid under the provisions of the National Health Insurance Acts by reason of the increase in the cost of living and whether he would consider increasing the benefit, as has been the case in many other benefits and allowances as a result of war time conditions —Mr **Brown** replied While I am not as yet in a position to make a statement on this subject, I hope to do so soon

GEOFFREY RAYMOND EDWARD MAXTED

M.B BRIST ; SURGEON LIEUTENANT R.N.V.R.

rgeon Lieutenant Geoffrey Maxted, who has been ted killed as the result of enemy action, was the ger son of Mr. E B Maxted D.Sc., a lecturer he department of chemistry in the university of Bristol. Geoffrey Maxted was educated at King's School Canterbury, and at the University of Bristol, where he graduated in medicine in 1938 Prof C Bruce Perry writes:

Geoffrey Maxted obviously enjoyed all his work and exhibited a healthy scepticism to traditional views As a student, stimulated by claims that some infections are more common among persons of certain blood-groups he investigated the distribution of the main blood-groups in matic heart disease. Although the results were nega- it was a useful study carried out with care and for work he was awarded the Martyn memorial scholar-

The paper embodying the results was published in *Archives of Diseases in Childhood* (1940 15 181)

fter graduation he held house-appointments at the tol General Hospital, at Southmead Hospital and at Leicester Royal Infirmary

t the outbreak of war he volunteered for the V.R and received his commission in December 9 He was killed just after his 26th birthday He ed the sea, swam and dived well, and had sailed his small boat under many conditions which proved his rage, including a voyage in bad weather from the th Coast round Land's End to the Bristol Channel had a happy disposition and an attractive personality, his death will be felt as a personal loss by all who e into contact with him

ROBERT DUDLEY ROPER

M.B. CAMB ; SURGEON LIEUTENANT R.N.V.R.

Dr R. D Roper, who died on Feb 2 aged 34, was the of the late Dr. H. J. Roper of Leeds He was cated at St Edwards School, Oxford, and St. John's lege Cambridge and qualified M.R C.S. from Bart's 1933 He took his B Chir. the same year and obtained M.B in 1935 After qualification Roper became a ualty house-surgeon at Bart's, but he went to Charing oss as house-surgeon to the ear, nose and throat de- tment and here he took up anaesthetics as a specialty. er becoming honorary anaesthetist to the hospital e was also anaesthetist to the Hospital of SS John and zabeth and to the Connaught Hospital at Waltham- ow and he had built up a growing private practice in esthetics. When war broke out he joined the E.M.S t he found the work uncongenial and as soon as he uld obtain his release he volunteered for service with e R N V R, for he had always loved the sea. A friend ls how as a student he spent many of his happiest hours Burnham-on-Crouch sailing a yacht in which he had a re. Travel and the theatre were his other hobbies. d he had a large collection of books among which he ighted to spend quiet afternoons.

Dr. ELIZABETH HURDON

Miss M. M. Chadburn, chairman of the cancer com- ttee and surgeon to the Marie Curie Hospital, writes: lizabeth Hurdon made no claims and her distinction was e acknowledged excellence of her work. She combined e scientific and the clinical to an unusual degree she had orked and collaborated with the distinguished staff of the ohns Hopkins Hospital and come in contact with many f the greatest medical minds of her day in America he had done important work both in hospital and in rivate practice in Baltimore she had travelled widely nd knew the clinics in France Germany, Sweden elgium and America And when the Marie Curie Hospital was started the committee felt that they were rtunate in obtaining her services as radium officer and rector of the work; she understood and was able ccessfully to contend with the difficulties attached to he rather unwilling acceptance of women's work in ome quarters of the profession and she won the admira- on and respect of her colleagues both male and female wherever her work was known The Marie Curie Hospital owes much to her judgment, scientific mind and independence of thought

Dr Hurdon was not only a scientific worker She was an arresting personality a stimulating and interesting companion a good talker, interested in what was going on everywhere in the world and also in the small things of everyday experience and in the fortunes and misfortunes of her friends When she died she had just finished a treatise on the radiological treatment of cancer which I hope may be published shortly In one of her last letters to me knowing all about her own illness and imminent death she said she hoped to finish it "in time" And I believe she did

MEDICINE AND THE LAW

Damages for Mental Shock

ONE more case has been added to the series of awards of damages for nervous shock without visible injury At the Norfolk assizes Mrs Englestown was given £450 general damages and £250 special damages in her action against a defendant who had negligently caused an accident which she witnessed. The Rev. Mr. Shead drove his car out of a side road and collided with a lorry driven by Mr. Hardy, a haulage contractor Mrs. Englestown, walking on the footpath was not touched by either vehicle; but she complained that her involuntary witnessing of the occurrence had induced a state of collapse There was medical evidence that she was suffering from hysteria, she was afraid of cars. one doctor said that, when he attended her recently, she shrieked at the mention of a motor-car; her condition, he said, was now worse than it was two years ago It was stated that she refused to go into an institution, and yet there was little prospect of her recovery unless there was institutional treatment. She had sued both Mr. Shead and Mr Hardy. The judge found that the former was to blame for the accident: he ordered him to pay the whole of the damages and also Mr Hardy's costs

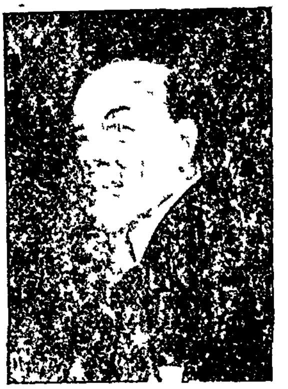
The modern decisions include Hambrook v Stokes (1925) where a mother was held entitled to damages if she could prove that she suffered shock from a reasonable fear of immediate personal injury to herself or her child. If she knew that a runaway vehicle was descending a hill on which her child was standing and if she could prove that she suffered mental shock as the reasonable consequence of the negligence of the defendant who left the vehicle in a dangerous position unattended then she would recover damages Lord Atkin then Lord Justice Atkin, was prepared with characteristic courage to extend the liability. The negligent person who had failed to look after the vehicle would be liable not merely if shock resulted by reason of a mother's natural anxiety for her child but even where a bystander felt apprehension for the safety of some third party. How much further one wonders, can the possibilities of emotional disturbance be exploited? A writer in the *Canadian Bar Review* in 1939 cited two instances. In Bielitski v Obadiak (1922) the Saskatchewan court of appeal allowed a wife to recover damages for shock caused by her having seen the defendant striking her husband. This was not far removed from the facts in Hambrook v Stokes, but in the second instance the Nebraska supreme court went further. In Rosmussen v. Benson (1938) a dairyman had bought some sacks of bran for his cows from a seller who had forgotten that he treated the bran in one sack with arsenic in order to poison insects The dairyman saw five of his cows die next day and worked himself into such a state of anxiety about his cows and the possible poisoning of his customers that he fell ill and subsequently died. The Nebraska court held that the dairyman's executors could recover damages from the negligent seller of bran for the shock and its consequences

In 1939 came an English extension of principle in the case of Owens v. Liverpool Corporation where a Liverpool tram negligently collided with a hearse containing a coffin. The mother and uncle of the deceased were being driven with two other relatives at the head of a funeral procession behind the hearse They were not themselves in any danger; they were not anxious for the safety of any living person but their emotions were

HAROLD SCURFIELD

M D. EDIN , D P H

Dr Harold Scurfield who died at Letchworth on Feb 8 was for seventeen years medical officer of health for Sheffield, where his wide knowledge of public health was placed without reserve at the disposal of any cause which he championed



Elliott & Fry

Born at Sunderland in 1863 he went to school at Birkenhead and afterwards studied medicine at Edinburgh, where he played rugby for the university He graduated in 1889 and after a brief spell as medical officer at the Post Office he returned to his native Sunderland as surgeon and agent to the Admiralty Six years later in 1896 he was appointed medical officer of health for the borough and port In 1904 he moved to Sheffield, where he succeeded (Sir) John Robertson on his call to Birmingham The health officership to the municipality was in each case combined with the chair of public health at the university Scurfield was also examiner for the University of Oxford He had a deep and abiding interest in the problems of tuberculosis, infant welfare and school hygiene, and in the midst of this busy life he found time to translate Nocard's " Les tuberculoses animales " In 1912 he reported to the International Congress of Tuberculosis when it met at Rome on the control of tuberculosis in the British Isles, and in 1919 he contributed the volume on infant and young child welfare to the Story of the English Public Health which was appearing under the editorship of Sir Malcolm Morris

In appearance Scurfield was tall austere, rather heavily bearded, and a little gruff Within he was modest, inquiring and singularly responsive to the claims of family life and of social service He was an untiring worker with the faculty of codifying in his mind what he read and observed so that at the appropriate moment they crystallised in a policy or an article without obvious effort And he had that instinctive interest in little things that may sometime become important In moving about on his lawful occasions and on constant visits to congresses at home and abroad he came to know what everyone was doing and was as familiar with Nathan Straus's home pasteuriser, Octavia Lewin's snuff and May Mellanby's rickety puppies as he was with the albuminoid ammonia in drinking water or the temperature of a refuse dump This it was that made him welcome as a visitor at any scientific gathering and as an unsigned contributor to our columns over many years of his nominal retirement to Folkestone, when he was still as busy as in his official life

Dr Scurfield was twice married By his first marriage to Charlotte Bray in 1891 he had no children, by his second in 1901 to Mary Bazeley who took a prominent part in social work at Sheffield he had four sons and four daughters

ROBERT CRAIG DUN

M B EDIN , F R C S

Mr Craig Dun died at Shrewsbury on Jan 31 after an operation In his early career he was assistant surgeon to the Stanley Hospital, Liverpool, but soon after his appointment to the Children's Infirmary in 1900 he decided to devote himself entirely to the surgery of children At the infirmary his colleagues included two outstanding children's physicians, Peter Davidson and Percy Marsh Dun served the infirmary (later to become the Royal Liverpool Children's Hospital) for 32 years, until he retired on reaching the age-limit

Dun had a broad thick-set figure, with large hands which in the operating-theatre worked with exquisite neatness and gentleness He was compact of quietness, serene courtesy and a strength which was never aggressive To watch him do a cleft palate or an intussusception was a delight, he was so obviously an artist, delicate in his technique, considerate to the frail tissues on which he worked He was equipped for all types of surgery, and did beautiful work in cranial surgery among his child patients His colleagues recognised his solid qualities by calling him to the chairmanship of the Liverpool Hospital Staffs Association, a position which he held for several not too easy years in its early days

He was the son of Mr Finlay Dun of Edinburgh and was educated at Loretto He qualified M B at Edinburgh University in 1893, and took his B Sc three years later He did postgraduate study at Berlin and Berne, served in the South African War, and became a lieut -colonel in the R A M C during the last war. He was a past president of the Liverpool Medical Institution After his retirement, he went to live at [illegible] Manor, near Shrewsbury, where he enjoyed his garden and the life of the countryside

JAMES ALLAN

M D ABERD , D P H

Dr James Allan, who died at his home in Leeds on Jan 28, aged 88, was until 1925 medical superintendent of St James's Hospital He took the M B at the University of Aberdeen in 1877 and the M D three years later On graduation he served as house surgeon and house-physician in the Liverpool Northern Hospital and then, for another two years, as assistant medical superintendent of the Wandsworth and Clapham Union Infirmary He went to Leeds in 1881 as medical superintendent of the old union infirmary, later St James's Hospital, a post which he was to hold for 44 years To this work he devoted himself heart and soul no man was more conscientious or diligent in the discharge of his duties He developed and improved the nursing service at the infirmary, and instituted successful courses of lectures which paved the way for the establishment of a nurses' training-school A first-rate administrator, he was also keenly interested in clinical work and in pathology His favourite time for post-mortems was 10 P M and he expected his resident assistants to b there He was a member of the Leeds and West Riding Medico-Chirurgical Society and its president in 1907-08, and an original member of the Leeds Pathological Club

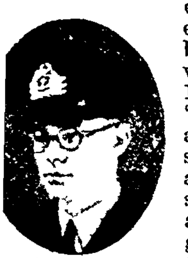
Tall, dignified and with a fine open countenance, Dr Allan was an outstanding figure in any company He was a man of few words but strong convictions, and not readily deflected from a course once decided upon Shy and reserved, he was not easy to get to know, but he had many good friends and warm admirers, and with them he could be both witty and amusing—even sarcastic if the occasion demanded He was buried with his forbears in his native village of Birnie, Elgin

SIR PENDRILL VARRIER-JONES

Prof V H and Mrs Mottram write The notices of Varrier-Jones's death have not, we think, sufficiently brought out two qualities of his which endeared him to his friends and patients The first was a power of sustained, witty, almost frivolous but always clever conversation We have sat at his dining table at Papworth Hall—a table made somewhat ‘intimidating by the brass plates let into it commemorating the august Presences who had sat at it—and listened delightedly while he made fun, and exhilarating fun, of himself, the world, the flesh and even the devil In all this he was always kindly, without malice, but as clearsighted as a hawk We never gathered what his Weltanschauung was, nor his politics, and we believe that there was only one thing about which he had no hint of doubt and that was the idea at the back of the Papworth settlement We think that all must grant him the truth of that magnificent conception The other quality we noticed as he took us round the settlement was his detailed, friendly and fatherly interest in all his patients He had the history of each at his finger tips and an insight into their psychology which certainly enabled him to turn that psychology into account in bringing about a cure of their tuberculosis If we were pressed to answer where his greatest genius lay we think we should say just this that he realised that tuberculosis should be attacked on every side and that not the least side was through the patient's psychology, and that he shared with royalty the gift of remembering through the years the personal details of the lives with whom his work brought him into contact

GEOFFREY RAYMOND EDWARD MAXTED

M B BRIST , SURGEON LIEUTENANT, R N V R



Surgeon Lieutenant Geoffrey Maxted, who has been ported killed as the result of enemy action, was the unger son of Mr E B Maxted, D Sc , a lecturer the department of chemistry in the university of Bristol Geoffrey Maxted was educated at King's School, Canterbury, and at the University of Bristol, where he graduated in medicine in 1938 Prof C Bruce Perry writes "Geoffrey Maxted obviously enjoyed all his work and exhibited a healthy scepticism to traditional views As a student, stimulated by claims that some infections are more common among persons of certain blood-groups, he investigated the distribution of the main blood-groups in eumatic heart disease Although the results were negave it was a useful study carried out with care, and for is work he was awarded the Martyn memorial scholarip The paper embodying the results was published in ie *Archives of Diseases in Childhood* (1940, **15**, 181)"

After graduation he held house-appointments at the ristol General Hospital, at Southmead Hospital and at ie Leicester Royal Infirmary

At the outbreak of war, he volunteered for the N V R and received his commission in December, 939 He was killed just after his 26th birthday He oved the sea, swam and dived well, and had sailed his wn small boat under many conditions which proved his ourage, including a voyage in bad weather from the outh Coast, round Land's End, to the Bristol Channel He had a happy disposition and an attractive personality, nd his death will be felt as a personal loss by all who ame into contact with him

ROBERT DUDLEY ROPER

M B CAMB , SURGEON LIEUTENANT, R N V R

Dr R D Roper, who died on Feb 2, aged 34, was the on of the late Dr H J Roper of Leeds He was ducated at St Edwards School, Oxford, and St John's College, Cambridge, and qualified M R C S from Bart's n 1933 He took his B Chir the same year and obtained is M B in 1935 *After qualification* Roper became a casualty house-surgeon at Bart's, but he went to Charing Cross as house-surgeon to the ear, nose and throat department, and here he took up anæsthetics as a specialty, later becoming honorary anæsthetist to the hospital He was also anæsthetist to the Hospital of SS John and Elizabeth and to the Connaught Hospital at Walthamstow, and he had built up a growing private practice in anæsthetics When war broke out he joined the E M S but he found the work uncongenial and as soon as he could obtain his release he volunteered for service with the R N V R , for he had always loved the sea A friend tells how as a student he spent many of his happiest hours at Burnham-on-Crouch, sailing a yacht in which he had a share Travel and the theatre were his other hobbies, and he had a large collection of books among which he delighted to spend quiet afternoons

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MEDICINE AND THE LAW

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The modern decisions include Hambrook *v* Stokes (1925), where a mother was held entitled to damages if she could prove that she suffered shock from a reasonable fear of immediate personal injury to herself or her child If she knew that a runaway vehicle was descending a hill on which her child was standing, and if she could prove that she suffered mental shock as the reasonable consequence of the negligence of the defendant who left the vehicle in a dangerous position unattended, then she would recover damages Lord Atkin, then Lord Justice Atkin, was prepared with characteristic courage to extend the liability The negligent person who had failed to look after the vehicle would be liable not merely if shock resulted by reason of a mother's natural anxiety for her child, but even where a bystander felt apprehension for the safety of some third party How much further, one wonders, can the possibilities of emotional disturbance be exploited? A writer in the *Canadian Bar Review* in 1939 cited two instances In Bielitski *v* Obadiak (1922) the Saskatchewan court of appeal allowed a wife to recover damages for shock caused by her having seen the defendant striking her husband This was not far removed from the facts in Hambrook *v* Stokes, but in the second instance the Nebraska supreme court went further In Rosmussen *v* Benson (1938) a dairyman had bought some sacks of bran for his cows from a seller who had forgotten that he treated the bran in one sack with arsenic in order to poison insects The dairyman saw five of his cows die next day and worked himself into such a state of anxiety about his cows and the possible poisoning of his customers that he fell ill and subsequently died The Nebraska court held that the dairyman's executors could recover damages from the negligent seller of bran for the shock and its consequences

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SCOTLAND

CARNEGIE TRUST

At the recent annual meeting of the trust the chairman remarked that it would be idle to speak of future policy at a time when future conditions could only be guessed For 1940–41 the Scottish universities, and those extramural institutions in receipt of grants during 1935–40, would normally receive an advance equal to one-fifth of their quinquennial grant, amounting in all to £50,760 But it was proposed to reduce this grant in the coming year in order to accumulate reserves to meet the heavy calls on the trust's help when peace is restored Many research fellows and scholars who had intimated a suspension of their work would be enabled to resume it at a later date, and in the case of teachers the trustees had arranged to pay half the difference between their stipend and their service pay when called up, the other half being paid by the universities The number of students in receipt of payment of class fees and the amount expended on them had shown an actual increase on 1939–1940, the present expenditure being £54,100 As many new applicants were accepted for the winter session 1940–41 as in each of the previous two years despite the fact that the total number of students had declined This was because the trustees had taken into consideration the rising cost of living and had adopted a more liberal view of students' needs

POOR LAW STIGMA

Dr A S M Macgregor has submitted to his public health committee a scheme for the complete dissociation of Glasgow municipal hospitals from the Poor Law The scheme would extend the principle which has already been adopted for infectious diseases by making the care of sick persons generally the responsibility of the public health department, at present they must apply for poor law relief before admission During 1940 27,500 patients were treated for a variety of illnesses in the general hospitals, all of them by way of the relieving officer, in the same year 18,408 patients were admitted directly and without formality to the fever hospitals Dr Macgregor feels that this differentiation stultifies the usefulness of hospitals whose equipment and specialist services have developed much since they were transferred to the local authority in 1929 Moreover it keeps the public hospitals on a status inferior to that of voluntary hospitals

Public Health

Trichiniasis Further South

During the past month there have been seven known cases of trichiniasis in the urban district of Harpenden, Herts They have been mild, with little or no gastro-intestinal upset, constipation being more common than diarrhœa The symptoms seem to resemble closely those reported from Wolverhampton, with puffiness of the face and muscular pains and weakness The source of infection, which is being inquired into by Prof R T Leiper, has not yet been traced

Infectious Disease in England and Wales

WEEK ENDED FEB 8

Notifications —The following cases of infectious disease were notified during the week smallpox, 0, scarlet fever, 1217, whooping-cough, 3023, diphtheria, 1103, enteric fever, 7, measles (excluding rubella), 15,486, pneumonia (primary or influenzal), 1741, puerperal pyrexia, 138, cerebrospinal fever, 345, poliomyelitis, 10, polio-encephalitis, 1, encephalitis lethargica, 7, dysentery, 168, ophthalmia neonatorum, 82 No case of cholera, plague or typhus fever was notified during the week

Deaths —In 126 great towns there was no death from smallpox, 1 (0) from enteric fever, 3 (0) from scarlet fever, 38 (0) from whooping-cough, 32 (2) from measles, 35 (2) from diphtheria, 39 (4) from diarrhœa and enteritis under 2 years, and 261 (56) from influenza The figures in parentheses are those for London itself

Yarmouth reported the fatal case on enteric fever, Birmingham had 8 deaths from whooping cough, and Liverpool 6 Fatal cases of influenza were scattered over 73 great towns, Liverpool reporting 24 deaths, Blackpool 14, Croydon 8, and no other great town more than 6

The number of stillbirths notified during the week was 198 (corresponding to a rate of 39 per thousand total births), including 5 in London

Incidence of Influenza

The deaths from influenza in the 126 great towns have risen from 53 (8) in the week ended Jan 4 to 69 (9) on Jan 11, 99 (17) on Jan 18, 120 (22) on Jan 25, 176 (40) on Feb 1, and 261 (56) on Feb 8

The return of deaths for the great towns, 261, breaks the sequence of repetitions of the 1929 experience, then following 179 we had 321 The ratio of 261 to 176 is almost the same as the ratio of 176 to 120 so it is very unlikely that a maximum has yet been reached, but it becomes increasingly improbable that the maximum will be of the order of magnitude of that of 1929 and not unduly optimistic to think that it will not exceed that of 1940 The age distribution of deaths is quite normal The detailed figures for London suggest that the maximum of mortality is near, that it may well be in the now current week, and that the maximum of admissions of cases of influenza, pneumonia and bronchitis to hospital is already passed Over half the total deaths still come from the south-eastern area (including London), and it remains to be seen whether mortality in the north will increase at a faster rate

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The Inconstancy of Milk

Those who purvey milk are to some extent at the mercy of their cattle, and before now dairymen have been prosecuted for adulterating milk with water when the cow was the real culprit The vitamins in milk can vary like other constituents Karl Guggenheim has shown (*J Hyg Camb* 1940, 40, 690) that, in Palestine, season has a great influence over the total vitamin A content of milk, but no certain effect on vitamin C The formed vitamin A remains roughly constant, but the carotene varies with the amount of green fodder eaten In Palestine the carotene and vitamin A of milk correspond to those of American and European milk Where plenty of green fodder is available, as in the valley of Jezreel, there is more vitamin A in the milk Fluctuations in vitamin C, oddly enough, bear little or no relation to the nature of th

Medical News

versity of Cambridge

t recent examinations the following were successful —

D M R.E.

art I —Manfred Altmann R. D Caton, Arthur Elkeles J E sgow, Grace M Griffith, Max Halberstaedter and P C Phelps

he faculty board of medicine have coöpted Sir Walter gdon-Brown for 1941 They have appointed Dr W L H kworth, Prof H R Dean, F.R S , and Dr G S Graham-ith, F R S , members of the appointments committee for 1–42 , and Dr Graham Smith, Dr R A McCance, Dr B Verney, F R S , and Mr W H Bowen members of the) committee for 1941

he following have been appointed examiners for the l M B for 1941 —

urgery —Mr R. Davies Colley, Mr R M Handfield Jones, Sir ed Webb Johnson, Mr Eric Crook and Mr Julian Taylor following may be called upon to act Mr W H C Romanis, W D Doherty Mr Lancelot Bromley, Mr G T Mullally, Mr Pennell, Mr R M Vick, Mr R H O B Robinson, Mr M F holls, Prof John Morley, Mr W H Hey and Prof Lambert ers

idwifery —Mr Aleck W Bourne, Mr Aubrey Goodwin, Prof J Browne, Dr J R C Canney The following may be called n to act Mr L H W Williams, Mr A J McNair, Dr J D ris Mr Victor Lack, Mr F W Roques Mr R A Brews, Prof nel Dougal Dr A A Gemmell, Mr William Gilliatt and Mr rold Chapple

Medicine —Prof John Ryle Prof J W McNee Dr A E Naish, Charles Wilson, Dr C E Lakin and Dr H Gardiner-Hill e following may be called upon to act Dr. F H. Young, Dr C D Firth Dr J M H Campbell, Dr T L Hardy, Sir Adolphe rahams, Dr Donald Hunter, Dr A G Evans and Prof Crighton mwell

Pharmacology —Dr Verney and Dr McCance The following y be called upon to act Dr Philip Hamill, Dr E C Warner, J C Hoyle, Prof F R Winton, Prof T H Oliver and Dr offrey Bourne

Pathology —Prof Dean and Prof M J Stewart The following y be called upon to act Dr E T C Spooner, Dr E ff Creed, R Williamson and Prof G Payling Wright

yal College of Surgeons of England

A meeting of the council was held on Feb 13 with Sir Hugh tt, the president, in the chair The Hallett prize was esented to Mr J D T Jones of Durham University Mr K Martin of University College Hospital was re elected member of the court of examiners, and Mr Ernest Hey oves representative of the college on the General Medical uncil Dr A P Cawadias was appointed Thomas Vicary turer for 1941

It was decided to recognise the post of second surgical ficer at the Royal Gwent Hospital, Newport, for the six onths surgical practice required of candidates for the final llowship examination

Diplomas of membership, and diplomas in public health d in medical radiology were granted to the candidates med in the report of the comitia of the Royal College of ysicians in our issue of Feb 8 (p 200)

On Monday, Feb 24, Mr R Davies Colley will give the t of the spring course of Arnott Erasmus Wilson demonstrations He will speak on inflammation of bone Other cturers will be Feb 28, Dr A J E Cave, the anatomy of e cervical plexus , March 3 and 10, Surgeon Rear Admiral P G Wakeley, tumours of the alimentary tract , March 7, r Cave, the anatomy of the brachial plexus , March 11, r R Davies Colley, tumours of the breast, and March 14, r Cave, the innervation of the body wall The demonstra ons, which are open to medical practitioners and advanced udents, will be held at the College, Lincoln's Inn Fields, ondon, W C 2, each day at 3 P M

niversity of Sheffield

Mr F W Holdsworth has been appointed honorary cturer in orthopædic surgery

Prof S L Baker (University of Manchester) has been pointed external examiner in pathology and bacteriology

Prof G A Clark has been elected representative of the iversity on the committee to be set up to draft a constitu-on of the proposed regional committee in connexion with e regionalisation Scheme of the British Hospitals Associa-on and the Nuffield Provincial Hospitals Trust

Dr R E Lane has been appointed lecturer in medicine the University of Manchester

Pharmaceutical Students and the Army

The Pharmaceutical Society is making representations to the Ministry of Health concerning the future supply of pharmaceutical students who are at present reserved from military service when they have completed two years of training The wording of the reservation prevents newcomers into the pharmaceutical calling from securing reservation before they are qualified, and after students of the present generation have passed their examinations there may be only women entering pharmacy It is hoped to secure a modification of the schedule so as to enable a reasonable annual intake of students to be maintained

Lieutenant N B Walker, M B Durh , R A M C , and Lieutenant A L Karstaedt, M B Cape Town, R A M C , who were previously reported missing are now posted as prisoners of war

The M B E has been awarded to Lieutenant Robert Horton, M B Lond , R A M C , and the George Medal to Lieutenant John Monks, M B Manc , R A M C , and Dr William Walton, medical officer of health for West Bromwich

The following meetings of the Davyhulme Military Hospital Medical Society have been fixed —

Feb 27, Major F I Evans, who will speak on burns, March 13, Prof Crighton Bramwell, effort syndrome , March 27, Prof Harry Platt, deformities of the hands and feet , and April 4, Major H B Jones, venereal disease in the Army and its treatment The meetings will begin at 3 P M and medical men or women in any of the services (including civilian) will be welcomed

On Feb 20 Lord Horder, president of the Chartered Society of Massage and Medical Gymnastics, presented to the war organisation of The British Red Cross Society and the Order of St John of Jerusalem a mobile physiotherapy unit for the treatment of men in the forces

The unit, which is to be the first of several, will be staffed by qualified members of the society, and it contains apparatus for giving electrical and light treatments, such as galvanism, faradism, infra red rays, radiant heat, ultra violet light, and paraffin wax baths The apparatus and its accessories are mounted on four trolleys which can be wheeled out of the van and into each hospital

Births, Marriages and Deaths

BIRTHS

Cathie —On Feb 13, the wife of Major Ian Cathie, R A M C , of Leigh, near Reigate—a son

Davidson —On Feb 5, at Newcastle upon-Tyne, the wife of Dr Whately Davidson—a daughter

Leader —On Feb 7, the wife of Dr Reginald Leader, of Erith, Kent—a daughter

Mills —On Feb 11, at Ramsbury, Wilts, the wife of Dr W. T Mills—a son

Southward —On Feb 8, in Glasgow, the wife of Lieut Ralph Southward R.A M C —a son

Stevens —On Feb 12, in Cairo, the wife of Major C P Stevens, R A.M C —a son

MARRIAGES

Bacon—Wrightson —On Feb 15 at York, Aidan Henry Bacon, M B to Gwendoline Joyce Wrightson

Gallie—Eustace.—On Feb 5, at Sliema, Malta John Ross Gallie, M B , lieutenant, R.A M C , to Edythe Madeline Eustace

Jack—Weeks —On Feb 10, at Abbasia, Cairo, Ewen Alistair Jack, F R C.S E , major, R.A M C to Vivien Mary Weeks

Pye Smith—Ford —On Feb 15 at Ilkley, Edward John Pye-Smith M B , captain R A M C , to Mary Audrey Ford

Stewart—Lochhead —On Feb 12 at Ipoh Perak, William Muir Stewart, M B , captain, R.A.M C , to Helen Cargill Lochhead

White—Arnould —On Feb 11, in London Michael William Langtry White, M R C S , to Mary Seton Arnould

DEATHS

Bogle —On Feb 13 at Cheltenham, James Linton Bogle, M D Edin , late of Villa Vaniglia Bordighera aged 89

Bulloch —On Feb 11, William Bulloch, M D , LL D Aberd , F R S , aged 72

Burnside —On Feb 17, at Paisley, Eustace Augustus Burnside, M R C S Colonel A.M S (ret), Knight of the Order of St John of Jerusalem, aged 80

Gray —On Feb 18 at Hindhead, Sarah Gray, F R.C S I aged 81

Kinsey-Taylor.—On Feb 12 Alfred Ernest Kinsey Taylor, M B Lond , F R.C S of Farnham Royal, Bucks

Starkie —On Feb 11 at Watford, Richard Francis Starkie, M D R.U I , aged 88

Ticehurst —On Feb 17 at Hastings, Claud Buchanan Ticehurst, B Chir Camb , F R G S , of Appledore Kent

Notes, Comments and Abstracts

OWL'S-EYE VIEW OF DIET

IN his Honyman Gillespie lecture delivered on Feb 13 Dr C P Stewart spoke on nutritional factors in dark adaptation The term has been used to cover not only the adaptation of the photo-receptivity of the retina, but also the changes occurring in the nerves to the visual centre A purely chemical process is involved in photo-receptivity

Bright light breaks down the visual purple found in the rods while it is synthesised in the dark The brighter the light the greater the rate of destruction Visual purple is manufactured in the retina from several precursors, one of which is vitamin A Bleaching of the pigment results in the reformation of the vitamin All methods of investigation depend on exposing the eyes to a bright light and then noting how long it takes them to appreciate varying low intensities of light Such investigations show that dark adaptation not only by the rods but also by the cones must be taken into consideration Cone adaptation is carried out by a pigment similar to visual purple which may also be synthesised from vitamin A Changes in the neural elements and the nerves must also be considered, and possibly visual acuity as well It has long been known that cod-liver oil and liver are useful in the treatment of night-blindness Surveys of the population by Jeans showed that 20% had subnormal dark adaptation correlated to a deficiency of vitamin A in the diet Within 3 to 4 days of being put on a vitamin A-free diet subjects showed impaired dark adaptation, and after 4 to 5 weeks classical night-blindness might be present The rate of return to normal under the influence of vitamin A is much slower than the depreciation due to the lack of it Later research has refuted claims that there is a high degree of correlation between the dark adaptation and the vitamin-A content of the body All that can be stated is that when dark adaptation is normal then the vitamin-A content is normal, but when dark adaptation is abnormal other factors such as abnormalities of the retina and defects in the neural elements and nerve-fibres must be taken into consideration as well as a possible defect in the vitamin supply Vitamin C also plays a part in the chemical reactions, for it has been shown that the addition of ascorbic acid to the diet improves dark adaptation This action is different from the action of vitamin A, for it can be shown that further improvement takes place although a full supplement of vitamin A has already been given The metabolism of the retina simulates very closely that of brain tissue in general Some fractions of the B complex are necessary for proper metabolic function—namely, aneurine, riboflavin, and nicotinic acid The evidence is still incomplete, but recent work has shown that some people with subnormal dark adaptation who have failed to respond to either vitamin A or C have responded to the addition of riboflavin to the diet Other factors affecting dark adaptation are age and changes in oxygen tension The older the subject the higher the light threshold and the longer the time taken for the eye to become dark adapted Reduction of oxygen tension corresponding to a height of 8,000 feet produces definite lowering of dark adaptation, while at an oxygen tension representing 18,000 feet there is severe night-blindness The effect of reduced oxygen tension appears to be on a different mechanism than that influenced by vitamin A With vitamin-A deficiency the rods are affected but the cones are not and the time factor is delayed In reduced oxygen tension the time factor is unchanged, but the dark adaptation of the rods and the cones are affected equally

ASTLEY COOPER

Thomas Wakley would turn in his grave if the centenary of his death on Feb 12, 1841, were allowed to pass without some mention of his association with THE LANCET in its early days Our first number, for Oct 5, 1823, opened with the report of a lecture by Astley Cooper announced as follows

> " and as the Lectures of Sir Astley Cooper, on the theory and practice of Surgery, are probably the best of the kind delivered in Europe, we have commenced our undertaking with the introductory address of that distinguished professor given in the theatre of St Thomas's Hospital on Wednesday evening last "

Unlike Abernethy who followed him as THE LANCET's chief attraction, Astley Cooper did not resent the publication of his lectures, though he felt himself " disgraced and degraded by his name forever appearin in the diurnal press," which then as now sometimes found good news value in medical reports This led to a call on Wakley and the threat of an injunction In his " Life and Times of Thomas Wakley " Sprigge recounts how Astley Cooper obtained admission in the characte of a patient, and caught Wakley, who at the time believed the secret of his editorship to be inviolate, in the act of correcting a proof of one of the lectures in question. " Never did a small check serve a man to better purpo than did Sir Astley Cooper's little ' score '—there is no other word—serve Wakley The great baronet was so pleased at the success of the rather transparent ruse that had gained him entrance and at the sight of Wakley obvious discomfiture when he found his anonymity gone that any wrath he might have been cherishing was di solved in hearty laughter " Wakley gave an assurance that Astley Cooper's name would be omitted from futur reports and peace was made Astley Cooper neverthe less strongly opposed the publication of operations as being likely to prove destructive to the reputation of the rising generation of surgeons, but he stuck loyally to his pact and took no part in the later wrangling betwee lecturers and THE LANCET as to whether the publicatio of a lecture infringed the author's copyright

On Monday, Feb 24, at 2 P M, Dr E Wilfred Fish wi address the odontology section of the Royal Society o Medicine on benign neoplasia of tooth and bone On Feb at 2 30 P M at a combined meeting of the sections of medici and ophthalmology Dr W D Wykeham Brooks and Colo F A Juler will open a discussion on iridocyclitis On th same day at the same time Dr C P Symonds is giving h presidential address to the section of psychiatry On Feb 27, at 3 30 P M the section of urology will hold a clinic pathological meeting at which specimens will be shown

On Jan 24 the state department of health for New York began the free distribution of sulphapyridine in an effort further to control pneumonia in the state and to help patient who are too poor to try it The drug is being distributed fo the use of registered doctors and hospitals, and a list of supp stations designated for this purpose has been drawn up Th drug will only be obtained on the request of a physician f the treatment of a specific case

Appointments

BREWER, H L, M B Melb, F R C S R S O at St John's Hos pital, Lewisham

CUNNINGHAM SMITH, H S, M R C S examining surgeon under th Factories Act 1937 for Brixham, Devon

FLYNN, MARY, M B N U I, D P H asst school M O for Kent

FRASER, J A, M B Edin, D P H M O H and school M O f the North Riding of Yorkshire

LEDGER, MARGARET E M B Lond asst school M O for Kent

MANGAN, W F, L R C P I examining surgeon under the Factorie Act 1937 for Liverpool (Garston)

MUIR, CLEMENT, M B Edin, M R C P E, D P H temp as M O for Surrey

WATTERSON, DOROTHY, M B Edin, D P H temp asst M O for Surrey

Aberdeen Royal Infirmary—The following appointments a announced

GAYTON, W R, M B Melb, F R C S general surgical offic

INNES, C B, M B N Z, F R C S general surgical officer, a

CAMPBELL, M S, M B Lond orthopædic surgical officer

SOLUTION TO THE
LANCET CROSSWORD
OF FEB 8

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ORIGINAL ARTICLES

ANAEROBIC INFECTIONS AND GAS GANGRENE[1]

By G. T Mullally, M C M S Lond F R C S
SURGEON TO WESTMINSTER HOSPITAL

It is not yet sufficiently realised that just as septicæmia is a sequel or complication of pyogenic infection so gas gangrene is an infrequent complication of anaerobic infection. Two related conditions must therefore be defined at the outset infection by gas-forming anaerobes; and true gas gangrene.

INFECTION BY GAS-FORMING ANAEROBES

There is a group of spore-bearing anaerobic organisms of which *Clostridium welchii* and *Cl. septique* are the most often met which are commonly found in all types of lacerated wounds. The organisms or their spores are constantly present in cultivated soil and in clothing made from wool or skins. The infection is likely to be more heavy in lacerations received in the highly cultivated lands of Western Europe, and in those parts of the world where wool and skins are necessary for protection from cold, than in the deserts of North Africa or in warm climates or seasons when cotton clothing is sufficient. The infection will also tend to be heavier when the wound is produced by direct external violence than when it is produced by internal violence, as in a compound fracture resulting from indirect force. It will also be heavier when the wound is produced by irregular missiles, such as bomb or shell fragments or broken bullets, than when the wounding agent is smooth like a bullet or a bayonet. The irregular missile will certainly carry in some clothing containing the organisms.

It is safe to assume that all recent wounds seen in England which have been caused by shell or bomb fragments are infected by gas-forming anaerobes. These organisms will grow and spread rapidly but at first only on dead or almost dead tissue. They produce a greyish film on the wound surface from which escapes a small amount of thin dirty exudate with an unpleasant smell often containing small bubbles of gas. These changes in the wound surface occur very rapidly and are usually well established within twenty-four hours of the injury—that is they appear much more rapidly than the familiar changes due to pyogenic infection. These first changes are not accompanied by gross swelling or hyperæmia of the wounded part nor is there any characteristic general reaction.

If the wound is associated with much laceration and bruising of the surrounding tissues these rapidly change colour and become green and black much brownish discharge appears gas bubbles freely from the blackened sloughs and the wound smells abominably. There is swelling of the surrounding tissues and often a little crepitation from gas under the skin. The wound is not unduly painful; the temperature and pulse-rate are moderately raised and the patient looks and feels ill. Such a wound under any or no treatment will shortly produce laudable pus from the action of the ordinary pyogenic organisms the sloughs will separate leaving weak pale granulations bathed in pus and at the end of a fortnight it will be covered by healthy granulation and well on the way to healing. In other words, the anaerobic infection has produced some interesting phenomena in the first forty-eight hours but has not obviously interfered with the normal processes of inflammation and repair. Indeed gas infection is an interesting but harmless feature of most lacerated wounds. It would not be worthy of special mention and study were it not that in a small minority of cases it is liable to develop the rapidly fatal and almost untreatable complication which we know as gas gangrene.

GAS GANGRENE

Gas gangrene is an *acute spreading gangrene* characterised by the production of large amounts of gas in the tissues and by a profound toxæmia. The natural termination of the disease is death from toxæmia or from a general invasion of the body by the causal organisms. It is an infrequent complication of the infection of wounds by certain spore-bearing anaerobes of which *Cl. welchii* and *Cl. septique* are the most important. Within a time varying from six hours to four days but usually in the second twenty-four hours after the injury, the wound becomes abnormally painful and the surrounding tissues become swollen and tense. At the same time there is a steep rise in the pulse-rate and sometimes a rise in temperature, though this is not great as a rule and is often absent. These are prodromal signs gangrene threatens.

If nothing is done to abort the disease the pain will continue for a variable time according to the severity and acuteness of the attack and will often cease quite suddenly. The pulse-rate continues to rise to 140 or even 160 but is the pulse of fever and not the running pulse of shock or collapse. The patient who is at first alert but anxious and distressed by the pain and discomfort becomes conscious of a change for the better. He is often excited and talkative, assuring himself and everyone how much better he is; he becomes restless and thirsty and in the later stages vomits incessantly. In contrast with his euphoria, his complexion—which in the early stages shows the flush of fever—now has a muddy pallor which obviously presages death. Mild jaundice is common in the last stages and is often seen soon after the onset of the disease. A coma of exhaustion usually precedes death.

Locally the tense and swollen limb becomes yet more tense and swollen; crepitations from gas can be felt under the skin, which becomes white and waxy. The swelling and crepitation begin to advance rapidly, traversing the thigh from knee to groin in two hours or less. They do not stop at the junction of the limb with the trunk but go on inexorably, not even ceasing with the patient's death. At first the tense white skin is obviously alive whatever may be the condition of the underlying tissues, but as time passes it too dies. The first sign is a brown discoloration from hæmolysis. This is only a warning and skin so stained is probably viable but when purplish discoloration appears the skin is dead. The smell or the gas escaping from the wound are only evidences of gas infection and not necessarily of serious importance. Smell and gas do not make gas gangrene, but may presage its arrival. The diagnosis is made on two main features severe and progressive toxæmia as shown by rapid pulse, restlessness euphoria and vomiting and increased swelling and tension in the wound area with evidence of gas in the tissues.

The warning that gas gangrene is imminent is given by the combination of increase of pain and tension in the wound and a steep rise in the pulse-rate. A wounded man once he is settled comfortably in bed should not be conscious of severe pain. If he is in severe pain something is wrongly arranged or some change—such as hæmorrhage—is occurring. If a patient who has been reasonably comfortable complains of pain and becomes restless always ask yourself if he is threatened with gas gangrene, and don't rest until you have satisfied yourself on this point. There are few conditions in which a few hours may be so vital. Infection with gas-forming anaerobes is a common almost universal feature of all war wounds; gas gangrene is an infrequent complication of such infection. Infection with gas-forming anaerobes needs no specific treatment except that directed to the prevention of gas gangrene.

FACTORS IN THE DEVELOPMENT OF GAS GANGRENE

The wounds which develop gas gangrene are ones involving muscle, but not all muscle wounds go on to gas gangrene. Generally speaking the larger the amount of muscle damaged the greater the danger of gas gangrene, but this is not the whole story. Big open lacerations of the thigh or buttock may severely damage a pound or more of muscle, and this great devitalised mass will show all the phenomena of infection with gas-forming anaerobes in their most obvious form. Much smell much gas colour changes in the muscle from brick

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[1] Based on a lecture delivered at the British Postgraduate Medical School in January 1941

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red to green and black, will all be obvious, but the patient, although seriously ill from the severity of the infection and the suppuration, will not be in any danger of gas gangrene. So the disease is not due simply to infection of damaged muscle with gas-forming anaerobes; there must be some other factor.

But if a fragment of shell, penetrating the buttock through a small hole in the skin, grossly lacerates the muscles without disturbing the overlying fat and skin gas gangrene is very likely to develop; here a large mass of lacerated and gas-infected muscle is enclosed so that when swelling occurs the local tension is greatly raised. Perhaps the important cause is not the injury to muscle but the tension. The apparent liability of wounds of muscle to develop gangrene may arise from the fact that almost all severe wounds involve much muscle and that the real cause of the disease is the retention of the infected tissues under pressure. There is evidence to support this view. Infection of a large hæmothorax with gas-forming anaerobes may go on to a fulminating attack of gas gangrene and similar infection of the retroperitoneal tissues may give rise to an inevitably fatal spreading cellulitis and gangrene. In each of these cases we have gas gangrene starting in dead or damaged tissue other than muscle. It is clear, therefore, that injury to muscle is not an essential feature of the disease. But it will not do to ascribe the disease merely to raised tension at the site of the wounds. In penetrating wounds of the brain it is a common thing to find that when the hole in the bone and the dura is enlarged gas and decomposing brain escape with such force as to show they have been retained under considerable pressure. In spite of this I have never, in my experience of many hundreds of brain wounds, seen gas gangrene follow. In fatal cases of gas gangrene beginning elsewhere and terminating in a blood infection I have seen the brain at autopsy full of gas bubbles. There is thus no inherent antagonism between brain tissue and the anaerobes, and it seems to follow that retention of the infected tissues under pressure is not by itself enough to lead to gas gangrene.

Infection by gas-forming organisms of a large mass of tissue, either grossly damaged by the missile or—as in the case of blood in a hæmothorax or in the retroperitoneal space—cut off from the defensive mechanisms of the body, is very liable to go on to gas gangrene if free drainage to the exterior is prevented. The danger scarcely exists if the amount of damaged tissue so retained, as in brain wounds, is small. Another group of cases illustrates these points dramatically—wounds in which the main vessel of a limb is divided so that the part distal to the wound is threatened with simple gangrene. In these gas gangrene is almost certain, and every hour that passes without treatment makes the disease more certain. The wound need not be large—a tiny fragment is as lethal as several ounces of metal. Here we have the large mass of ischæmic tissue retained under the intact skin.

The factors then which make for the development of gas gangrene in some wounds are: a large mass of damaged and devitalised tissue confined in such a way that the products of the infection cannot escape, and must be absorbed. This explanation does not, at first sight, cover all the cases seen. Gangrene often occurs in comparatively slight wounds of the calf and thigh muscles, in which the total amount of laceration must be small. Wounds of this type will only develop gas gangrene if the damaged tissue is muscle. Small wounds of skin or subcutaneous tissue or bone or brain are not dangerous in this regard although the infecting organisms will grow freely in them.

MUSCLE

Does the anatomy of muscle explain the appearance of gas gangrene in comparatively unimportant wounds? Muscle is an aggregation of long fragile fibres enclosed in a strong fascial sheath. The fibrous inelastic sheath closely invests the fleshy mass, is attached to the tendon or bone in which the muscle ends and often gives attachment to many of the muscle-fibres. In the limbs each group of muscles is enclosed by an outer sheath of strong fascia, and then the deep fascia of the limb forms a sheath enveloping all the muscles together. The blood supply is derived in the trunk from small branches from many sources, but in the limbs many of the muscles are supplied by one or two main branches, which have a very poor anastomosis with vessels outside the sheath. Consequently any interference with the main blood supply of a limb muscle is liable to cause a dangerous ischæmia.

When a small fragment of bomb or shell enters the calf or thigh it makes a small hole in the skin which may or may not gape, then a large hole with soft ill defined walls in the subcutaneous fat; it then pierces the deep fascia, through a hole just large enough to admit it and no larger, and with sharp, rigid, inelastic edges; finally it pierces the muscle sheath and enters the muscle tissue. So far it has been traversing passive tissues, now it strikes an active tissue which responds to stimulation by a violent contraction. This reflex contraction pulls the damaged muscle-fibres widely apart, with the formation of a relatively large ragged cavity.

The ordinary reactionary swelling and hæmorrhage in response to the injury takes place inside the muscle sheath. Escape of the contained blood and fluid is often prevented by the shape and narrowness of the wound track or by prolapse of torn muscle or fat into the narrow fascial opening. So that there is now a small mass of infected material enclosed in the limb. Gas forming anaerobes become active and multiply rapidly in the walls of the ragged cavity and in the contained blood and debris; swelling of the muscle increases and gas is formed. Shortly the muscle sheath is completely filled and the cycle of strangulation with which we are familiar in so many inflammatory diseases begins to occur inside the muscle sheath. The venous return is interfered with, more swelling and œdema follow, more obstruction results, and before long what was a minor injury to the muscle has led to gross interference with the nutrition of a large part of it. Circumstances favouring the development of gas gangrene are thus produced.

TREATMENT

I have said nothing of the bacteriology and biochemical aspect of the problem partly from ignorance, but chiefly because, as I understand it, nothing has yet emerged which helps in the practical management of the disease.

The aim of treatment is to prevent the development of the disease, or, if this cannot be done, to arrest it with as little damage to the patient as is possible. The problem of gas gangrene would not arise if all wounds could be properly excised with three to six hours of infliction. A successful excision of a recent wound will ensure that the anaerobic infection is reduced to a minimum and that no considerable mass of material is left in which the organisms can prepare for an assault on the undamaged tissues. But only a minority of important wounds lend themselves to satisfactory excision. The patient may not reach the surgeon sufficiently early; his general condition may preclude operation for a good many hours, the multiplicity of his wounds may mean that the full operation would take two hours, or even more; the total number of patients needing attention may be such that only those measures which are essential can be taken for each one.

With patients in whom infection with gas forming anaerobes is already established or presumed we must aim at rendering the infection innocuous. The first step is to enlarge the wound in such a way that there is free drainage into the deepest recesses. The skin wound should be extended by adequate incisions, preferably parallel to the long axis of the limb; these incisions should go through the superficial fat as far as the deep fascia. The wound in the deep fascia should then be enlarged in the same directions, and if necessary (and it often is) the fascia should be divided transversely also so that the tortuosities of the wound track are more clearly visible and the tension is more adequately relieved. Next, the hole in the underlying muscle sheath must be similarly enlarged, and then the walls of the wound in the muscle itself cut away freely until healthy muscle is exposed. This needs care because the fibres may retract unequally and deep pockets may be found in the walls of the wound, the openings into which must be enlarged freely. The wound track should be followed through from muscle to muscle if necessary, the same care being used, whenever a fascial layer is encountered, to make an adequate opening.

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2 See Campbell, J and Pennefather, C M *Lancet*, 1919, 1, 294

It will often not be practicable to pursue this ideal pening up to the full depths of a small wound in, say, the ig muscles of the thigh, the damage done would be ncommensurate with the risk that we are trying to essen In these cases, however, the real danger comes rom the small holes in the inextensible fascial sheaths, nd these holes should be freely enlarged whenever and wherever they are encountered We must watch out or the nerves running to the muscles and never divide vessels going into a muscle Division of such a vessel may provide just that mass of dead or damaged tissue we are trying to get rid of From the limited angle of nfection with gas-forming anaerobes and gas gangrene t matters little what is done with the wound once it has been adequately opened up Probably some form of oose pack is best

Treatment on these lines will be sufficient for wounds of muscle seen before any evidence that gas gangrene is hreatened If the case cannot be dealt with until pain and swelling and rise in pulse-rate have occurred, the same approach should be made, but on more generous ines, until the damaged muscle is reached There will be much more smell, gas bubbles will be seen, and the muscle round the wound track will be firm and friable of a brick-red colour, and will not contract on stimulation All this muscle must be freely cut away until healthy bleeding and contracting muscle is reached It may be necessary to resect a whole muscle belly before one can be satisfied that safety has been ensured If faced with the next stage of actively spreading gangrene, do not rush at once to amputate Ask yourself if it is possible to get rid of the gangrenous mass by a local excision of a muscle, or a group of muscles It may be possible to save a limb by sacrificing the soleus and gastrocnemii, or the hamstrings In doubtful cases there is neither danger nor objection to large exploratory incisions into the affected area It is important to remember that the upper limit of the gas is not related closely to the upper limit of the gangrene but often precedes it by many inches, conversely, the gangrene of muscle always extends to a higher level than that of the skin If amputation must be done it is usually possible and advisable to fashion skin flaps, which should be long to allow for excessive retraction If on dividing the muscles it is found that one or more is already gangrenous at the site of section, do not change your plan—finish the amputation and then split your stump widely and excise the dead muscle Never sew the flaps together, just pack the wound with gauze and bandage it firmly

As far as I am aware, there is as yet no serious evidence that anti-gas-gangrene serum and sulphanilamide have any effect Much that has been ascribed to them seems to be based on ignorance of the normal course of these infections and of the effects of surgical treatment As to X rays, I would hesitate to use an empirical method in a disease so dangerous and rapid, I will wait until good evidence of its efficacy is produced

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ELIMINATION OF STREPTOCOCCI FROM SUPERFICIAL WOUNDS

BY SULPHANILAMIDE POWDER

By Leonard Colebrook, M B Lond
COLONEL, R A M C CONSULTANT BACTERIOLOGIST AND
A E Francis, M D Lond, M R C P
MAJOR, R A M C

The introduction of sulphamido-chrysoidine (red prontosil) by Domagk in 1935 and of *p*-amino-benzene-sulphonamide (sulphanilamide) by M and Mme Trefouel, Nitti and Bovet (1935) attracted world-wide attention, because these compounds seemed to bring us for the first time within sight of an "internal antiseptic," that is one which would control bacterial infection by way of the blood-stream In the earliest clinical trials in this country it was observed that the hæmolytic streptococci were not killed off completely in the local focus, for they could often be cultivated from the lochial discharges for two or three weeks after a patient's recovery from puerperal fever (Colebrook and Kenny 1936) Similarly they were found to persist in the tonsils after treatment of tonsillitis or scarlet fever Further, Domagk and other German authors laid stress on the fact that red prontosil had little or no direct bactericidal or bacteriostatic effect on hæmolytic streptococci

These considerations made it appear unlikely that the local application of the new drugs to infected wounds would have much effect Later, however, when it became clear that red prontosil was converted into sulphanilamide in the body (Trefouel et al, 1935, Fuller 1937), and that this latter substance had a considerable bactericidal and bacteriostatic effect on hæmolytic streptococci in vitro, even when no cellular elements were present (Colebrook, Buttle and O'Meara 1936, Hoare, 1938, Fuller, Colebrook and Maxted 1940), the possibility that the local application of the drug might be beneficial began to attract attention Purdie and Irx (1937) were the first in this country, so far as we are aware, to report the powdering of a wound infected with hæmolytic streptococci In order to obtain the maximal therapeutic effect these authors gave sulphanilamide by mouth as well as locally, and there was therefore some doubt as to how much of the striking clinical result was due to the local application During the last few months the opportunity has arisen to investigate the effect of local applications of sulphanilamide (and sulphathiazole) on a number of superficial wounds in the maxillo-facial unit of Park Prewett Hospital (E M S) at Basingstoke

In the investigation 35 patients with 62 wounds were followed through for several weeks All of them were infected with hæmolytic streptococci, 55 wounds yielding cultures of Lancefield's group A, 9 of group G, and 1 of group C In 1 case the original infection was a streptococcus of Lancefield's group D, this case subsequently became infected with group-A streptococci In 3 cases an original infection with streptococci of group A was replaced, after treatment with sulphanilamide, by hæmolytic streptococci of group D. The great majority (32 patients) received sulphanilamide locally only, and none by mouth Swabs were taken from the wounds usually 24 hours after the last application of sulphanilamide powder In order to exclude the possibility that the absence of streptococci in cultures was due to transfer of a trace of the drug on the swab, the latter was sometimes inoculated into 10 c cm of blood broth from which subcultures were made on blood agar They never gave a positive result where the direct plate culture was negative In other cases negative swabs were planted on blood agar containing 1/500,000 gentian violet (Garrod 1933), in order to ascertain that a few streptococci were not overgrown by an abundant growth of staphylococci

METHOD OF APPLICATION

It was found essential, before beginning treatment, to remove sloughs coagulated exudate, dried pus and remains of tan This was effected by saline baths In some cases eusol dressings were found to be of assistance Wounds were usually dressed once daily After removal of the old dressings, which were sprayed with sterile saline to facilitate removal and minimise trauma in cases not receiving saline baths, and after completion of the wound toilet, finely powdered sulphanilamide was insufflated on the wound, and over grafts if these were present, until the appearance resembled a hoar-frost No advantage was found from heavier powdering Tulle gras was then applied and gauze, well moistened with saline, covered this In order to retain moisture the gauze was covered in turn by a considerably larger sheet of jaconet or oiled silk, and a firm bandage applied We would emphasise the importance of this retention of moisture and of applying the powder to the wound surface before a thin film of dried exudate has formed on it—often a matter of only two or three minutes exposure In several instances when attention was not paid to these details streptococci persisted longer than usual on the wounds

When the next dressing was performed 24 hours later the sulphanilamide was found to be completely dissolved on all raw areas though it was still clearly visible on the surface of grafts and on the surrounding skin Solution was not always complete in a few cases in which the wounds were examined after 4 or 6 hours

In some cases sulphathiazole was used It was found to be almost completely undissolved after 24 hours, but most of it had disappeared if left for 48 hours It appears to have been less effective than sulphanilamide in these circumstances against *Streptococcus pyogenes*, but has freed a small number of wounds of *Pseudomonas pyocyanea* and *Proteus* Sulphanilamide has not been successful with the latter organisms

RESULTS

Group-A infections—In 21 cases with 33 wounds infected with *Streptococcus pyogenes* the local application of sulphanilamide powder resulted in the permanent disappearance of the microbes In 3 cases with 10 sulphanilamide was also given by mouth, and in these the streptococci also disappeared In 4 cases a recrudescence of infection followed grafting operations which were carried out within ten days of obtaining the first negative swab from the wounds concerned Owing to the procedure then followed the wounds were not dressed for several days, and powdering could not be continued The streptococci were of the same type before and after grafting in each case One other case should probably be classed under this heading, but the type of streptococcus originally present is not known The infection reappeared in one case four days after the discontinuance of powdering Another patient who returned to hospital a month after discharge with a small ulcer on a grafted area was also found to be harbouring hæmolytic streptococci in this ulcer In all these cases the infection responded to a further course of treatment, with the exception of the last, who had to leave hospital before treatment could be started, for urgent domestic reasons

Group-C infections—In one case a wound was freed of group-C streptococci and healed uneventfully

Group-G infections—In one case these streptococci disappeared with local treatment only, in another with local and simultaneous oral therapy, and in a third case, unsuitable for local therapy (compound fracture of the mandible), with oral sulphanilamide only

Group-D infections—In 4 cases this streptococcus has been found to resist local treatment with sulphanilamide

ILLUSTRATIVE CASE-RECORDS

The signs +, ++ and +++ indicate the presence and abundance of hæmolytic streptococci in culture, the sign − indicates a negative culture, Sm or Stz 1/d indicate the local application of sulphanilamide or sulphathiazole powder respectively once daily

CASE 1—Excision of rhinophyma, Sept 20, 1940 Two unhealed ulcers on nose

Oct 8	+++ Group A	Oct 21	−
,, 18	++ Sm 1/d started	,, 24	Discharged healed
, 20	−		

CASE 2—Petrol burns of face and hands, Sept 26, 1940 Unhealed area on left forearm

Oct 2	+ Group A, type 11	Oct 14	Few
,, 7	+ Sm 1/d started	,, 19	−
,, 10	Few	, 21	− Discharged healed

CASE 3—Petrol burns, May 16, 1940 Unhealed donor areas on thigh, 23 2 sq cm

Oct 4	++ Group A type 12	Oct 14	−
,, 8	+++ Sm 1/d started	, 16	No swab Sm stopped
,, 9	Few	,, 19	− Area 10 26 sq cm
,, 10	−	,, 21	−
,, 11	−		

CASE 4—Petrol burns, June 20, 1940 Unhealed area on left forearm, 14 6 sq cm

Oct 10	+ Group A type 11	Oct 24	−
,, 11	+ Sm 1/d started	,, 28	−
,, 14	−	, 30	Successful graft
, 18	− Area 10 8 sq cm	Nov 5	Nearly healed

CASE 5—Burns of hands and face Unhealed area over interphalangeal joint of right ring finger, 2 sq cm

Sept 30	+ Group A type 12	Oct 8	−
Oct 4	+ Sm 1/d started	,, 9	−
,, 5	Few	,, 13	−
,, 6	−	, 18	Successful graft
,, 7	−		

CASE 6—Burns from incendiary bomb, May 21, 1940 Approximately symmetrical involvement of the hands Left hand only treated

	Left hand	*Right hand*		*Left hand*	*Right han*
Oct 13	+++	+++	Oct 19	− Sm 1/d	Proteus an
,, 16	Proteus	Proteus	,, 21	− ,,	++, no p teus
,, 17	Proteus				
	Sm 1/d	Proteus			

CASE 7—Donor area on chest, flap operation, Sept 1940 Area 60 sq cm

Oct 17	Few Group A, type 12	Oct 25	+
, 18	Few Stz 1/d	,, 27	−
,, 21	Few ,,	, 28	−
,, 23	Few Sm 1/d started	Nov 4	− Area 37 5 sq c

It will be noted in this case that sulphathiazole failed clear the infection in five days, but that sulphanilam succeeded in four days

All cases which for any reason received a sulphonam compound by mouth, such as a prophylactic course a operation, are excluded from these examples

FAILURES

The first case quoted under this heading illustra the fact that a wound cannot be successfully freed infection by *Strep pyogenes* if there is much exud which cannot be removed from the surface

CASE 8—Loss of scalp, injury by airscrew, Jan 23, 1 A pedicle graft had been formed, and behind this was a c fissure, in which a sero purulent exudate collected It also difficult to insufflate sulphanilamide adequately bel this flap

Oct 14	Few Group A, type 25	Oct 26	Pedicle sutured in tion
,, 16	++	,, 28	− Sm 1/d
,, 16	No swab Sm 1/d	, 30	− ,,
,, 18	++ ,,	Nov 4	− ,,
,, 20	+ ,,	,, 8	Healed
,, 22	++ ,,		
,, 25	++ ,,		

CASE 9—The failure in this case has not been adequa explained The *streptococcus* has been examined in and shown to be relatively insusceptible to sulphanilam

Fell in fire, April 7, 1938 Burn of scalp

Sept 21	+	Oct 30	−
Oct 1	+ Group A type 12	Nov 5	Grafted unsuc fully, 12 g given by mout next 5 days
,, 4	No swab Sm 1/d	,, 11	−
,, 6	− ,,	, 15	Grafted successf swab +++ a hours before o tion, 25 g Sm g by mouth in 6 days
,, 7	− ,,	,, 19	++
,, 8	− ,,	,, 21	++
,, 9	− ,,	,, 25	−
,, 10	− Sm stopped, 151 sq cm	, 28	−
,, 13	−	Dec 2	− Almost healed
,, 16	Grafted unsuccessfully 9 g Sm given by mouth in next 4 days		
,, 17	− Sm 1/2d		
,, 20	− ,		
,, 23	+ Sm 1/d		
,, 28	Few Group A, type 12		

Since no *Strep pyogenes* were found in the throats of patient or the nursing staff, and since no other patient in same ward was harbouring a streptococcus of identical t it is thought that the organism, which was *resistant* to t ment, remained in the depths of the granulation tissue final result, after two failures, is satisfactory

DISCUSSION

In view of the well-recognised tendency for hæmol streptococci to persist in open wounds, it seems hi probable that their prompt disappearance from so m wounds in this series after the beginning of local tr ment with sulphanilamide was in fact due to the c and not to coincidence

Dusting with sulphanilamide certainly had no adv effect on the healing process, indeed, in the majo healing seemed to be much accelerated when the stre cocci disappeared In a few cases the actual area traced on sterile Cellophane at intervals and meas ments of the area were made by planimeter * such case showed a reduction from 17 6 to 10 7 sq cm 5 days, and another from 5 2 to 2 0 sq cm in 8 d Further observations of this kind are required If t confirm the impression of rapid healing we have obta hitherto, the question will arise as to whether the accel tion was entirely attributable to the elimination of streptococci, or was perhaps due in part to some stimu action of sulphanilamide

The results obtained on superficial wounds with l exudate do not justify the assumption that sulpha amide introduced into a freely suppurating deep wo ll also get rid of streptococci, or even inhibit their e growth Fleming (1940) and Macleod (1940) have own that pus usually contains some factor (? products proteolytic digestion) which neutralises the bactericidal d bacteriostatic effects of sulphanilamide on strepto cci in vitro It may be that this factor, operating a suppurating wound will prevent the elimination of reptococci On the other hand it may sometimes happen at a strong solution of the drug in such a wound ll overcome the inhibitory effect of the pus that can ly be determined by observation of a number of cases

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* For these measurements we are indebted to Mr C W Burt Basingstoke

It is also to be expected that even on superficial ounds with little exudate sulphanilamide will somemes fail to eliminate hæmolytic streptococci, and that ese may reappear in the wound This may be due some cases to a relative insensitiveness of the streptoccus to the drug (Such relative insensitiveness has en demonstrated in vitro with a few group A strains e Hoare 1939) In other cases it may be due to refection from a deep focus to which the sulphanilamide es not gain access Reinfection may also sometimes e due to the persistence of streptococci on the skin ound the powdered wound owing to lack of fluid in hich the sulphanilamide can dissolve We are indebted Prof A. A. Miles for calling our attention to this ssibility He has himself observed such persistence the skin after disappearance of hæmolytic strepto cci from the actual wound We have confirmed this servation in a few instances It is to be noted here at we have found hæmolytic streptococci of Lancefield's oup D to be entirely resistant to sulphanilamide when pplied to wounds infected with these microbes, just as ey are resistant in the urinary tract

The ability to change the bacterial flora of superficial ounds at will—or at least to eliminate certain undesirble types—is likely to prove of considerable value ur experience suggests that the removal of hæmolytic reptococci will greatly accelerate healing, it will also nable plastic and orthopædic operations to be underaken with more assurance of success than in the past f, in the future, we can eliminate *Ps pyocyanea* and *proteus* as well the scope and value of skin grafting perations will also be greatly increased It may be at one of the potent antibacterial compounds produced y moulds or certain bacteria—e g, penicillin or "gramiidin"—will achieve this result

In the early treatment of burns too we may hope for aluable help, since streptococcus infections have in the ast been responsible for most of the tissue destruction and not infrequently for generalised infection) as well s for slow healing and the distressing contractures ssociated with it A recent experience with a group of severe burns (which will be reported elsewhere) suggests hat by local chemotherapy these infections can often e terminated in a few days and rapid healing secured

Yet another result may be expected—perhaps the ost important in the long run The elimination of æmolytic streptococci from many open wounds must nevitably diminish the chances of cross-infection in urgical wards There can be little doubt that the dissemination of organisms occurs chiefly in four ways— y dust, by faulty surgical technique, by the social ontacts of patients in the wards, and by droplets from ersons with an infected throat or nose The first three f these channels of infection will be effectively blocked n proportion as we can eliminate streptococci from our pen wounds Our experience at Park Prewett Hospital ffords a striking illustration of how the "streptococcus oncentration" in surgical wards may be affected by hese means When this investigation began no less han 73% of all the open wounds in the maxillo-facial nit were infected with hæmolytic streptococci Six eeks later the proportion had fallen to 20% infected ith all groups of hæmolytic streptococci or 12% infected ith group-A streptococci Although certain other easures—e g, segregation of cases, prophylactic dministration of sulphanilamide before operation and a tricter ward ritual—had been put into operation during his period, it is probable that the use of sulphanilamide owder was chiefly responsible for the change

SUMMARY

The effect of applying sulphanilamide powder to 62 uperficial wounds infected with hæmolytic streptococci has been investigated In 5 patients with 10 wounds the drug was given by mouth at the same time Hæmolytic streptococci usually disappeared from the wounds within 3 or 4 days and did not reappear Infections with hæmolytic group-D proved resistant to local treatment.

Neither sulphanilamide nor sulphathiazole had consistent effects on the staphylococci *B proteus* or *Ps pyocyanea* which were also present in many of the wounds

Acknowledgments are made to Sir Harold Gillies and the medical officers and sisters of the unit at Basingstoke for their collaboration in the work, to Dr C W Morley in charge of the laboratory for his help in carrying it out to Dr F Griffith and Dr Dora Colebrook of the Research Laboratory for Streptococcus Infections in London (Medical Research Council) for typing and grouping the many strains of streptococci and to Dr N I Connolly superintendent of Park Prewett Hospital, for his consent to publication

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A HUNDRED CASES OF BREECH PRESENTATION

BY

ALAN GAIRDNER
B M OXFD F R C S

MARGARET HADLEY JACKSON
M B LOND D R C O G

L N JACKSON, M C, D M OXFD

IDEALLY, breech delivery ought to be extremely rare In practice attempts at version, particularly in primigravidæ, often fail and choice has then to be made between vaginal delivery by the breech or delivery by cæsarean section It seemed to us worth while to collect a number of cases of breech presentation treated in hospital and private practice and to consider the results of various methods Under infant mortality we have included all stillbirths and deaths within the first few hours, whether attributable to labour or not.

HOSPITAL PRACTICE

From the records of the Royal Devon and Exeter Hospital one of us (A G) collected 64 cases of breech presentation Of these, 28 occurred among primigravidæ and 19 among multiparæ in the remaining 17 cases no note of parity was made Successful versions were noted in 11 cases and these are not further considered Version was noted as unsuccessful in 9 cases (some of which were subsequently delivered vaginally and some by cæsarean section) Maternal mortality in this series was nil, the infant mortality 10 Cæsarean section was performed in 26 cases of which 14 were primigravidæ and 7 multiparæ, in the remaining 5 no note was made Among these there was only 1 neonatal death a monstrosity with hydrocephalus and spina bifida which survived an hour Among the 27 infants delivered vaginally as breech or footling there were 8 deaths Unfortunately many of the records are incomplete, but the following brief notes are given for what they are worth —

CASE 1 —Multipara Aged 23 Breech Hydramnios Spontaneous delivery of very small baby which survived an hour only

CASE 2 —Primipara Aged 32 Breech with extended legs, three unsuccessful attempts at version Surgical induction No notes of delivery

CASE 3 —Multipara 2 Aged 34 Breech with extended arms and head Alleged contracted pelvis

CASE 4 —Primipara Aged 29 Breech with flexed legs. Failed version. No notes of delivery.

was not always complete in a few cases in which the wounds were examined after 4 or 6 hours

In some cases sulphathiazole was used It was found to be almost completely undissolved after 24 hours, but most of it had disappeared if left for 48 hours It appears to have been less effective than sulphanilamide in these circumstances against *Streptococcus pyogenes*, but has freed a small number of wounds of *Pseudomonas pyocyanea* and *Proteus* Sulphanilamide has not been *successful with the latter organisms*

RESULTS

Group-A infections—In 21 cases with 33 wounds infected with *Streptococcus pyogenes* the local application of sulphanilamide powder resulted in the permanent disappearance of the microbes In 3 cases with 10 sulphanilamide was also given by mouth, and in these the streptococci also disappeared In 4 cases a recrudescence of infection followed grafting operations which were carried out within ten days of obtaining the first negative swab from the wounds concerned Owing to the procedure then followed the wounds were not dressed for several days, and powdering could not be continued The streptococci were of the same type before and after grafting in each case One other case should probably be classed under this heading, but the type of streptococcus originally present is not known The infection reappeared in one case four days after the discontinuance of powdering Another patient who returned to hospital a month after discharge with a small ulcer on a grafted area was also found to be harbouring hæmolytic streptococci in this ulcer In all these cases the infection responded to a further course of treatment, with the exception of the last, who had to leave hospital before treatment could be started, for urgent domestic reasons

Group-C infections—In one case a wound was freed of group-C streptococci and healed uneventfully

Group-G infections—In one case these streptococci disappeared with local treatment only, in another with local and simultaneous oral therapy, and in a third case, unsuitable for local therapy (compound fracture of the mandible), with oral sulphanilamide only

Group-D infections—In 4 cases this streptococcus has been found to resist local treatment with sulphanilamide

ILLUSTRATIVE CASE-RECORDS

The signs + ++ and +++ indicate the presence and abundance of hæmolytic streptococci in culture, the sign − indicates a negative culture, Sm or Stz 1/d indicate the local application of sulphanilamide or sulphathiazole powder respectively once daily

CASE 1—Excision of rhinophyma, Sept 20, 1940 Two unhealed ulcers on nose

Oct 8 +++ Group A
,, 18 ++ Sm 1/d started
,, 20 −
Oct 21 −
,, 24 Discharged healed

CASE 2—Petrol burns of face and hands, Sept 26, 1940 Unhealed area on left forearm

Oct 2 + Group A, type 11
,, 7 + Sm 1/d started
,, 10 Few
Oct 14 Few
,, 19 −
,, 21 − Discharged healed

CASE 3—Petrol burns, May 16, 1940 Unhealed donor areas on thigh, 23 2 sq cm

Oct 4 ++ Group A type 12
,, 8 +++ Sm 1/d started
,, 9 Few
,, 10 −
,, 11 −
Oct 14 −
,, 16 No swab Sm stopped
,, 19 − Area 10 25 sq cm
,, 21 −

CASE 4—Petrol burns, June 20, 1940 Unhealed area on left forearm, 14 6 sq cm

Oct 10 + Group A, type 11
,, 11 + Sm 1/d started
,, 14 −
,, 18 − Area 10 8 sq cm
Oct 21 −
,, 28 −
,, 30 Successful graft
Nov 5 Nearly healed

CASE 5—Burns of hands and face Unhealed area over interphalangeal joint of right ring finger, 2 sq cm

Sept 30 + Group A type 12
Oct 4 + Sm 1/d started
,, 5 Few
,, 6 −
,, 7 −
Oct 8 −
9 −
,, 13 −
,, 18 Successful graft

CASE 6—Burns from incendiary bomb, *May 21, 1940* Approximately symmetrical *involvement of the hands* Left hand only treated

	Left hand	*Right hand*
Oct 13	+++	+++
,, 16	Proteus	Proteus
,, 17	Proteus Sm 1/d	Proteus
Oct 19	− Sm 1/d	Proteus
,, 21	− ,,	++, Proteus

CASE 7—Donor area on chest, flap operation, Sept 1940 Area 60 sq cm

Oct 17 Few Group A, type 12
,, 18 Few Stz 1/d
,, 21 Few ,,
,, 23 Few Sm 1/d started
Oct 25 +
,, 27 −
,, 28 −
Nov 4 − Area 37 5 sq

It will be noted in this case that sulphathiazole fail clear the infection in five days, but that sulphanil succeeded in four days

All cases which for any reason received a sulphona compound by mouth, such as a prophylactic course operation, are excluded from these examples

FAILURES

The first case quoted under this heading illus the fact that a wound cannot be successfully fre infection by *Strep pyogenes* if there is much ex which cannot be removed from the surface

CASE 8—Loss of scalp, injury by airscrew, Jan 23, A pedicle graft had been formed, and behind this was fissure, in which a sero purulent exudate collected also difficult to insufflate sulphanilamide adequately this flap

Oct 14 Few Group A, type 25
,, 16 ++
,, 16 No swab Sm 1/d
,, 18 ++ ,,
,, 20 + ,,
,, 22 ++ ,,
,, 25 ++ ,,
Oct 26 Pedicle sutured tion
,, 28 − Sm 1/d
,, 30 − ,,
Nov 4 − ,,
,, 8 Healed

CASE 9—The failure in this case has not been adeq explained The streptococcus has been examined in and shown to be relatively insusceptible to sulphanila

Fell in fire, April 7, 1938 Burn of scalp

Sept 21 +
Oct 1 + Group A type 12
,, 4 No swab Sm 1/d
,, 6 − ,,
,, 7 − ,,
,, 8 − ,,
,, 9 − ,,
,, 10 − Sm stopped, 151 sq cm
,, 13 −
,, 16 Grafted unsuccessfully, 9 g Sm given by mouth in next 4 days
,, 17 − Sm 1/2d
,, 20 − ,,
,, 23 + Sm 1/d
,, 28 Few Group A, type 12
Oct 30 −
Nov 5 Grafted uns fully, 12 given by mo next 5 days
,, 11 −
,, 15 Grafted succes swab +++ hours before tion, 25 g Sn by mouth fo 6 days
,, 19 ++
,, 21 ++
,, 25 −
,, 28 −
Dec 2 − Almost heale

Since no *Strep pyogenes* were found in the throats patient or the nursing staff, and since no other patient same ward was harbouring a streptococcus of identica it is thought that the organism, which was resistant to ment, remained in the depths of the granulation tissue final result, after two failures, is satisfactory

DISCUSSION

In view of the well-recognised tendency for hæm streptococci to persist in open wounds, it seems probable that their prompt disappearance from so wounds in this series after the beginning of local ment with sulphanilamide was in fact due to the and not to coincidence

Dusting with sulphanilamide certainly had no a effect on the healing process, indeed, in the ma healing seemed to be much accelerated when the st cocci disappeared In a few cases the actual are *traced on sterile Cellophane at intervals and* me ments of the area were made by planimeter* such case showed a reduction from 17 6 to 10 7 sq 5 days, and another from 5 2 to 2 0 sq cm in 8 Further observations of this kind are required I confirm the impression of rapid healing we have ob hitherto, the question will arise as to whether the acc tion was entirely attributable to the elimination streptococci, or was perhaps due in part to some stim action of sulphanilamide

The results obtained on superficial wounds with exudate do not justify the assumption that sulp amide introduced into a freely suppurating deep sulphathiazole in 15 cases of staphylococcal septicæmia, only 1 patient dying, no clinical details of any of his cases were given. Butler (1940) reported 5 cases of severe staphylococcal infection treated with sulphathiazole, with 4 deaths McCrea (1940) cured 2 cases of staphylococcal septicæmia with the drug In a previous paper (Melton 1940) I reported 11 cases of staphylococcal infection 2 with positive blood-cultures all of whom recovered

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* For these measurements we are indebted to Mr C W Bu Basingstoke

In this paper I am reporting the results of sulphathiazole treatment in 30 cases of staphylococcal infection, including the 11 cases already described[*] Most of these infections were of a severe type

ACUTE OSTEOMYELITIS WITH SEPTICÆMIA

There were 5 patients in this group and 2 of them died

CASE 1[*]—Girl aged 11 years Osteomyelitis of ilium Admitted April 4 1940, on 5th day of disease Very ill Blood-culture grew *Staphylococcus aureus* Plaster immobilisation. From 5th to 10th day sulphathiazole 6 g given intravenously plus 38 g by mouth Maximum concentration of free sulphathiazole in blood 3 8 mg per 100 c cm Blood culture remained positive and pyrexia high On 11th day surgical drainage of subperiosteal abscess of ilium On 20th day open drainage of suppurative arthritis of hip Pyrexia still high after operations Later course of sulphathiazole discontinued because of increased pyrexia due to drug fever Staphylococcal antitoxin (20 000 units) and blood-transfusion given on 27th day resulted in temporary improvement On 39th day blood-culture sterile From 40th to 43rd day a total of 48 g of sulphapyridine was given and this was followed by slight reduction of pyrexia but the child was not finally apyrexial until 5 weeks later Radiographs then showed extensive osteomyelitis of ilium Ankylosis of hip on discharge

Here the drug produced no obvious effect but the patient recovered

CASE 2—Girl aged 16 years Osteomyelitis of tibia Admitted June 25 1940 on 3rd day of disease Very ill On 4th day surgical drainage of subperiosteal abscess No improvement Blood-culture taken on 6th day grew *Staph aureus* From 10th to 18th day 8 g of sulphathiazole given intravenously plus 92 g by mouth No effect on blood culture or general condition Between 19th and 21st day staphylococcal antitoxin (100 000 units intravenously and intramuscularly) and blood-transfusion given with temporary improvement On 34th day blood-culture positive On 37th day patient died. Autopsy showed bacterial endocarditis with multiple abscesses

In this case the drug did not affect the disease

CASE 3—Girl, aged 8 years Osteomyelitis of pubic bone Admitted Aug 23, 1940, on 5th day of disease Profoundly toxic with metastatic inflammation in lungs and right radius Blood-culture grew *Staph aureus* Leg immobilised in Thomas splint. Sulphathiazole (65 g) given by continuous intravenous drip for 6 days Maximum concentration of free sulphathiazole[†] in blood 14 7 mg per 100 c cm Striking clinical improvement, with sterile blood-culture and apyrexia, after 5 days On 12th day recrudescence of fever with pericarditis On 18th day surgical drainage of abscess of forearm. On 25th day death from cardiac failure Autopsy showed purulent pericarditis, large deep-seated abscess arising from pubic bone

This patient improved greatly with the drug, her death was probably the result of failure to drain abscesses

CASE 4—Boy, aged 12 years Osteomyelitis of upper humerus Admitted July 20, 1940, on 4th day of disease Very ill Blood-culture grew *Staph aureus* Plaster immobilisation. From 4th to 8th day sulphathiazole, 10 g, given intravenously, plus 32 g by mouth Concentration of free sulphathiazole in blood 5·9 mg per 100 c cm. Definite but temporary clinical improvement with fall in temperature, but blood-culture remained positive (6th day) On 6th and 7th day staphylococcal antitoxin (38,000 units intravenously and intramuscularly) given without definite effect On 8th day drainage of subperiosteal abscess On 13th day blood-culture positive On 15th day drainage of small intramedullary abscess by drilling and saucerisation. From 16th to 19th day a further 36 g of sulphathiazole given by mouth with reduction of pyrexia but patient not finally apyrexial until end of 7th week Blood-culture sterile on 28th day Between 6th and 10th day metastatic foci of inflammation, which subsided without suppuration, in leg foot and arm, as well as dry pleurisy Radiographs after 7 weeks showed extensive osteomyelitis of upper half of humerus with sequestra

Here there was reduction of toxæmia after the drug the patient ultimately recovering

CASE 5—Girl aged 10 months Osteomyelitis of eleventh dorsal vertebra with local abscess confirmed radiologically Admitted Aug 2, 1940, on 14th day of disease On 22nd day surgical drainage of abscess pus showing *Staph aureus* Between 23rd and 26th day sulphathiazole (15 g) given by mouth Improved but pyrexia did not settle completely On 35th day right-sided pneumonia only slightly and temporarily improved by sulphapyridine (12 g) for 3 days Soon became very ill From 40th to 47th day further 4 5 g of sulphathiazole given by continuous intravenous drip followed by 10 g by mouth Rapid improvement with quick fall in high temperature lung condition and sinus of back were clearing up satisfactorily after a few days

This baby showed considerable improvement after the drug Clinically it was a case of septicæmia, although blood-culture was not done

ACUTE OSTEOMYELITIS WITH STERILE BLOOD-CULTURE

In this group 7 cases were treated without a death *Staph aureus* was found in pus from abscesses associated with diseased bone in 6 cases

CASE 6—Osteomyelitis of lower radius and ulna Infection followed open reduction for fracture Exacerbation of fever plus rigor resulted from manipulation of fragments Sulphathiazole (26 g in 4 days) followed by rapid fall in temperature within 36 hours the local infection recovering slowly with sequestrum formation

CASE 7—Osteomyelitis of lower humerus, 5 days illness Sulphathiazole (48 g in 9 days) No fall in temperature Subsequent surgical drainage of subperiosteal abscess followed by rapid apyrexia Radiographs 3 weeks later showed no bone disease

CASE 8—Osteomyelitis of upper humerus 3 weeks pyrexia followed by surgical drainage of intramedullary abscess From day after operation sulphathiazole (80 g) given in a week Apyrexial in a few days

CASE 9—Osteomyelitis of lower femur On 4th day after onset drainage of intramedullary abscess by saucerisation Sulphathiazole begun next day and 74 g given in a week Apyrexial after 4 days

CASE 10—Osteomyelitis of acetabulum with local abscess, following chronic osteomyelitis of tibia with sinus No improvement after sulphathiazole (22 g in 2 days) Rapidly apyrexial after drainage of abscess

CASE 11—Osteomyelitis of upper femur, 2 days' history with severe toxæmia Blood culture grew *Staph albus* (coagulase-negative probably contamination) Immobilised in plaster Sulphathiazole given by mouth (16 g in 2 days) without improvement followed by 6 g intravenously in 24 hours Free sulphathiazole in blood 2 hours after 1 g intravenously 5 7 mg per 100 c cm Rapid fall in temperature Blood-culture while on drug sterile Surgical exploration at beginning of intravenous therapy showed no pus in medulla Radiography after 3 weeks showed no definite bone disease

CASE 12—Osteomyelitis of spine (dorsal 9 and 10) with local abscess Sulphathiazole (105 g in 6 days) given in 6th week after onset, resulted in 4 days apyrexia followed by drug fever and rash. Fever subsided rapidly when drug discontinued Plaster bed when patient already apyrexial

In 5 of these cases the drug was followed by clinical improvement, and in 2 it was without effect

CHRONIC OSTEOMYELITIS

CASE 13—Brodie's abscess lower femur Surgical drainage of abscess After 4 days postoperative pyrexia sulphathiazole (49 g in 4 days) was followed by rapid fall in temperature

CASE 14—Osteomyelitis of lumbar vertebra with continued pyrexia and discharging sinuses 10 weeks after surgical drainage of abscesses over spine Blood-culture sterile At end of this period 96 g of sulphathiazole given in 10 days Permanently apyrexial 10 days after discontinuing drug

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[*] Cases 1, 6 7 11 13 15 20 21 23 have been described in *Proc. R. Soc Med* 1940, 33 651

[†] Sulphathiazole estimations were carried out by Marshall's method

CASE 5—Primipara Aged 29 Breech with prolapsed cord

CASE 6—Multipara 1 Aged 26 (First baby stillborn, ? cause) Breech with extended legs Admitted to hospital after being in labour 24 hours Legs and arms brought down

CASE 7—Parity unknown Aged 28 Breech with extended legs In labour 12 hours Legs and arms brought down Difficult delivery

CASE 8—Primipara Aged 19 Breech Vaginal delivery No notes of delivery

PRIVATE PRACTICE

From the records of our private practice we (M and L N J) collected 36 cases of breech presentation Of these 24 occurred in primigravidæ and 11 in multiparæ, in the remaining case no note was made None was treated by cæsarean section Version was unsuccessfully attempted in 2 cases Of the remainder, some were emergency calls for help from midwives or neighbouring practitioners, some were missed by one or other of us at antenatal examination so that version was not attempted, and some were deliberately left Maternal mortality in this series was nil, the infant mortality 9 The cases where the baby died were as follows —

CASE 1—Primipara Aged 26 Nurse's call for prolonged labour L S A Slow delivery Delay with after coming head which was finally delivered by forceps Male child weighing 8–9 lb Subsequent successful pregnancy

CASE 2—Primipara Aged 21 Nurse's call Born before arrival of either nurse or doctor Small male child Unmarried mother who concealed her pregnancy Not known if ever subsequently pregnant

CASE 3—Primipara Aged 25 Nurse's call L S A Resistant soft parts, ? contracted pelvis Extended arms and legs brought down Attempt to deliver head by forceps unsuccessful Finally delivered by jaw and shoulder traction and fundal pressure Long labour (40 hours) Not known if ever subsequently pregnant

CASE 4—Primipara Aged 24 Nurse's call R S P Extended arms and legs brought down Delay with head Large male child Probably "helped" too soon Subsequent successful pregnancy

CASE 5—Primipara Aged 36 Called in by another practitioner Protracted labour Legs brought down with difficulty One arm brought down but difficulty with head and extended right arm Fracture of right clavicle Long, thin male child born moribund Breathed 3 or 4 times only Not known if patient subsequently pregnant

CASE 6—Multipara 1 Aged 34 R S P when first seen but rotated to L S A Footling Contracted pelvis (diagonal conjugate 3 in) Delay with head Large female child stillborn Subsequent pregnancy and cæsarean sterilisation

CASE 7—Primipara Aged 24 Called in by another practitioner Contracted pelvis Arms brought down with difficulty Head delivered by jaw and shoulder traction Stillborn *female child* Subsequent *successful pregnancy*

CASE 8—Primipara Aged 22 Called in by another practitioner Shoulder presentation turned to breech Leg brought down Prolapsed cord Arm pushed up and second leg brought down Some delay with head Finally delivered by jaw and shoulder traction Lean male stillborn child Subsequent successful pregnancy.

CASE 9—Multipara 1 Aged 27 Born before doctor's arrival Nurse failed to deliver head Large female child stillborn

COMMENTARY

It would be idle to attempt to draw conclusions from a mere 100 cases, but certain points of interest emerge First, it may be noted that among these quite unselected cases there was no maternal mortality Secondly, cæsarean section undoubtedly gave the best immediate results, in 26 cases so treated there was only one fœtal death and that, a monstrosity, was a merciful release There can be no question that this simple and dramatic operation, attended with little immediate risk to mother or child, is a valuable weapon in the treatment of breech presentation, it is always at hand in hospital practice though less accessible to general practitioners, especially in country districts The third point is that breech delivery per vaginam greatly increases the risk to the child, the figures were In hospital, 27 cases, 8 infant deaths (30%), in private, 36 cases, 9 infant deaths (25%) So far as can be judged from the case-records there is no reason to suppose that the difficulties attending delivery differed appreciably in the two series. Altogether, of 63 children born vaginally breech first, 18 died

Breech delivery, then, is a hazardous proceeding, and it should be less common than it is Careful antenatal examination, supplemented where necessary by radiology, should reveal the presence of breech presentation, so that version can be attempted If version fail, cæsarean section becomes the treatment of choice especially in primiparæ or in cases where some degree of pelvic contraction is diagnosed It may be noted, however, that the risk of stillbirth is probably comparatively slight when vaginal delivery is carried out on a multipara with a good obstetric history by a skilled and patient accoucheur

It would be interesting to know to what extent, if any, cæsarean section or difficult vaginal delivery (with a fair risk of a stillborn child at the end of it) acts as a psychological deterrent to further pregnancy We are not, of course, in a position to answer this question, but at least 2 of our patients treated by cæsarean section had previously been delivered by this method, 1 of them twice Of the 36 women delivered vaginally in private practice 10 have had subsequent successful pregnancies, 15 have not risked it again, and of 11 we have no record Of the 9 mothers of stillborns, 6 have since had one or more children, 1 has not yet become pregnant again so far as we know and 2 are untraced This suggests that stillbirth is not a deterrent but rather a stimulus to try again, whereas difficult labour resulting in a live child may tend to persuade the mother to rest on her laurels

SUMMARY AND CONCLUSIONS

Of 100 consecutive cases of breech presentation in hospital and private practice, 11 were treated successfully by version and delivered as vertices, 26 were delivered by cæsarean section and 63 by the vagina

There was no maternal mortality but the total of stillbirths and neonatal deaths was 19, only 1 being among the infants delivered by cæsarean section

With increasing antenatal care breech delivery should be less common than it is If breech presentation is diagnosed version should be attempted If version fails cæsarean section is the treatment of choice, especially in primiparæ or where some degree of pelvic contraction is diagnosed

Breech vaginal delivery is less risky to the child in multiparæ than in primiparæ

Breech presentation with the baby born dead is not apparently a deterrent, either psychological or physical, to future successful pregnancy

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SULPHATHIAZOLE IN TREATMENT OF STAPHYLOCOCCAL INFECTIONS

By GEORGE MELTON, M D Lond, M R C P
SENIOR RESIDENT PHYSICIAN AT LEWISHAM HOSPITAL LONDON
COUNTY COUNCIL

THERE is ample experimental evidence of the effective bacteriostatic action of sulphathiazole and sulphamethylthiazole on staphylococci (Barlow and Homburger 1939, Herrel and Brown 1939, Long 1940, Macdonald 1940 Fleming 1940), but clinical data have consisted mainly of reports demonstrating their value in urinary infections (e g Pool and Cook 1940) Records of their action in the more severe types of staphylococcal infection, particularly in those associated with septicæmia, have mo th been confined to very small groups of cases

Herrel and Brown, employing sulphamethylthiazole, obtained a cure in a case of staphylococcal septicæmia and a favourable response in 2 cases of staphylococcal cellulitis Keliher (1940), using the same drug, cured a patient with staphylococcal septicæmia Gsell (1940) reported 2 cases of staphylococcal septicæmia unsuccessfully treated with sulphathiazole Paterson *and* Walker (1940) were able *to* cure a baby with staphylococcal septicæmia with the same drug Dietel (1940) succeeded in curing a baby with staphylococcal meningitis Carrol (1940) and Stirling (1940) each reported cures in 2 cases of staphylococcal septicæmia Spink (1940) in an interim report referred to satisfactory results with

The dosage employed varied considerably At first it was the practice to administer 1 g intravenously for three to six doses, followed by 1–2 g by mouth 4-hourly Subsequently for severe cases in adults the dose was increased to 3–4 g 4-hourly In septicæmia it has latterly been my custom to give the drug by continuous intravenous drip the daily dose being 20–25 g for adults, 10–12 g for children and 3 g for infants The sodium salt was dissolved in half-strength normal saline made isotonic with glucose and the drip feed regulated so that enough solution was run in to raise the sulphathiazole concentration in the blood to 15 mg per 100 c cm In practice this has been difficult to achieve The duration of sulphathiazole treatment has varied from 2 to 16 days most of the courses lasting from 5 to 7 days The difficulty of maintaining a sufficiently high concentration of the drug in the blood is due to its rapid excretion When the drug is given by mouth it is rapidly absorbed Reinhold (1940) noticed that after a single dose of 3 g , the highest blood-concentration in the majority of cases was reached after 2 hours and that after 4–6 hours the level was still above 4 mg per 100 c cm With continued oral administration of 1 g 4-hourly, concentrations of free sulphathiazole in the blood ranged from 1 2 to 19 mg per 100 c cm , averaging 5 45 mg Comparable figures were obtained by Gaisford and Whitelaw (1940) In the present series, free sulphathiazole varied from 1 6 to 8 7 mg per 100 c cm (average 4 6 mg) after 1 g 4-hourly, from 2 2 to 13 2 mg per 100 c cm (average 6 mg) after 2 g doses and from 3 to 9 6 mg per 100 c cm (average 6 5 mg) after 3 g doses

Long (1940) comments on the fact that after the first 24 hours of treatment concentrations of sulphathiazole in the blood are often much lower than would be expected from experience with similar doses of sulphapyridine, and that it is sometimes difficult to maintain an adequate concentration despite increases in dosage The necessity for giving copious fluids to prevent deposition of crystals of sulphathiazole in the renal tubules may help to lower the blood-concentration by promoting excretion In the elderly patients in whom renal function was impaired high blood levels were more readily reached—e g case 23 with 13 2 mg per 100 c cm on 2 g doses This fact has been observed in connexion with the other sulphonamides Since some degree of renal impairment is present in many old people their dosage should be adjusted by estimations of the levels in the blood It is worthy of note that, in the septicæmic group, blood-cultures became sterile in cases 3 and 23 with concentrations of 13–15 mg per 100 c cm but remained positive in cases 1 and 4 with concentration of 5–6 mg , despite the fact that the former two patients were more seriously ill

Sulphathiazole is reported to be less likely to cause vomiting than sulphapyridine and our experience supports this Vomiting severe enough to interfere with the administration of the drug occurred in only 1 patient 4 patients vomited occasionally after the tablets , and 2 vomited after intravenous administration, one of these also developing a transient urticarial eruption after each injection Drug rashes of the characteristic " erythema-nodosum " type were seen in 5 cases, usually associated with drug fever One of the patients developed severe conjunctival congestion with irritation of the eyes , similar symptoms were noted by Long in some of his cases

No evidence of renal damage other than transient albuminuria was observed, and even this could not always be attributed to the drug Case 23 with a high blood-urea before treatment was not adversely affected by sulphathiazole and the blood-urea became normal In case 25 the blood-urea did rise from 34 to 56 mg per 100 c cm while the drug was being taken, but quickly returned to normal when it was stopped Long found it necessary in some of his cases to discontinue the drug for hæmaturia‡ and anuria, but neither appeared in this series Daily measurement and testing of the urine are important, however

Moderate leucopenia below 6000 cells was seen in 10 cases, the lowest count being 4500 in 2 cases The count soon became normal again when the drug was discontinued In case 3 the count rose from 5500 to 11,500 while the patient was on sulphathiazole, and this rise corresponded to considerable clinical improvement When leucopenia develops it is necessary to consider stopping the drug , in very ill patients it would be inadvisable to do so unless the leucopenia became pronounced

CONCLUSIONS

The evidence goes to show that sulphathiazole is a therapeutic agent of value in staphylococcal infections Its action in staphylococcal septicæmia however has so far proved to be limited Early diagnosis is clearly essential to successful therapy with sulphathiazole, for failure and death occurred only in the advanced cases Fleming (1940) has shown that the action of the sulphonamides on suppurative inflammatory foci is inhibited by the presence of peptones in the pus Thus abscesses —whether local or metastatic—will prevent successful therapy unless they are accessible to surgical drainage Possibly large doses of sulphathiazole (controlled by repeated blood estimations) will give more satisfactory results in septicæmia particularly in the early stages of acute osteomyelitis before suppuration has taken place Fleming has also shown that the growth of staphylococci can be inhibited by a dilution of 1 in 60 000 sulphathiazole Such a level would probably be inadequate in the severe human infections and the findings in this series support the view that a blood concentration of 15 mg per 100 c cm is necessary for therapeutic success Staphylococcal antitoxin may enhance the action of the drug in the septicæmic cases

The best results were obtained in the milder cases, and although many of these would have recovered without sulphathiazole there is no doubt that in some of them it reduced toxæmia and hastened recovery As Butler has noted, sulphathiazole helps to reduce the toxæmia and fever which may persist after surgical drainage of abscesses or removal of the foci of infection

Sulphathiazole is less toxic than sulphapyridine in similar doses and experimentally has been found to be more potent against staphylococci , but it is more difficult to maintain high blood-concentrations of sulphathiazole than of sulphapyridine The decision on which is the more effective clinically must await further research

SUMMARY

A series of 50 cases of staphylococcal infection, mostly of severe type have been treated with sulphathiazole

In staphylococcal septicæmia the drug was of value when given early and in adequate doses, and rapid improvement which could be attributed to the drug occurred in 5 out of 13 cases In acute osteomyelitis it did not lessen the need for surgical drainage or check the progress of suppuration, but it helped to reduce toxæmia Many of the carbuncles ceased to extend when the drug was begun and the pyrexial period appeared to be shortened, but there were 2 deaths out of 5 cases of carbuncle on the upper lip or nose both in patients with cavernous-sinus thrombosis present before treatment was begun The drug was also found of value after surgical drainage had been instituted, in clearing up the toxæmia and accelerating the subsidence of the local lesion

It was found difficult to maintain an adequate concentration of sulphathiazole in the blood except in elderly patients because of rapid excretion, and in septicæmic cases the drug is best given as the sodium salt in isotonic solution by intravenous drip A concentration of 15 mg per 100 c cm in the blood should be attained

Vomiting is less common than with sulphapyridine, and the only other toxic effects seen were skin eruptions, conjunctival congestion and moderate leucopenia

I wish to thank Dr W Allen Daley, medical officer of health for the London County Council, for permission to treat the above cases, and the medical superintendents of the various L C C hospitals at which this research was carried out The sulphathiazole used in the clinical trials was supplied by Pharmaceutical Specialties (May and Baker) Ltd

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References continued at foot of next page

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‡ One of my ex patients (not in this series) developed hæmaturia with extreme oliguria this subsided when the drug was discontinued and 10% glucose saline was given intravenously

CASE 15 —Osteomyelitis of upper femur Surgical drainage of subperiosteal and metastatic abscesses of thigh followed by many weeks pyrexia and pathological fracture of femur Sulphathiazole begun on day after immobilising fracture in Thomas splint and 40 g given in 5 days Became apyrexial for 10 days (first time for many weeks) Relapsed subsequently

CASE 16 —Osteomyelitis of cuboid with discharging sinuses and mild pyrexia, not affected by sulphathiazole (46 g in 1 week)

CASE 17 —Osteomyelitis of tibia with sinuses Sulphathiazole (45 g in 3 days) given after failure of sulphapyridine to reduce fever Followed by increase in pyrexia and congestion of sclera (toxic manifestations of sulphathiazole) On discontinuing drug became rapidly apyrexial

There was definite improvement in 3 cases out of 5 in this group

CARBUNCLES

Of 22 cases of carbuncle treated with sulphathiazole *Staph aureus* was grown on blood-culture in 5 Magnesium or sodium sulphate was applied locally in all cases The results, with some illustrative cases, are as follows —

There were 5 cases of carbuncle in the danger zone—the upper lip and nose, with 2 deaths, both in patients who were moribund before treatment began

CASES 18 and 19 both had positive blood culture (*Staph aureus*) and both died with cavernous sinus thrombosis, present before therapy began

CASES 20 and 21 —In both of these the carbuncles subsided without sloughing, case 20 being apyrexial in 5 days and case 21 in 3 days

Of 4 cases of carbuncle on the lower lip, 1 had a positive blood-culture but all recovered

CASE 23 —Aged 71 with septicæmia Blood culture grew *Staph pyogenes* Blood-urea 96 mg per 100 c cm Sulphathiazole (3 g intravenously plus 80 g by mouth) given in 13 days, became apyrexial after 48 hours with sterile blood-culture after 11 days Maximum concentration of free sulphathiazole in blood 13 2 mg per 100 c cm Developed small empyema with *Staph pyogenes* in pus, which cleared up after single aspiration Blood urea normal on discharge

Of 13 cases of carbuncle on the scalp, neck or back, 3 had positive blood-cultures and there was 1 death

CASE 24 —Carbuncle of back and septicæmia Pneumonia and heart failure Blood culture grew *Staph aureus* Sulphathiazole given (12 g intravenously and 86 g orally in 7 days), temporary fall of temperature Staphylococcal antitoxin (42,000 units intravenously and intramuscularly over 4 days) produced further improvement Not apyrexial until 5 weeks, blood culture then sterile Sterile pleural effusion aspirated once

CASE 25 —Aged 79, with carbuncle of neck Blood culture grew *Staph aureus* Sulphathiazole (102 g by mouth in a week) Apyrexial after 4 days Sterile blood culture after 6 days

CASE 26, aged 79, with carbuncle of scalp and multiple subcutaneous abscesses, moribund before treatment began and died after 16 hours Of 4 carbuncles in diabetics all recovered satisfactorily

MISCELLANEOUS CASES

A group of 11 cases, 2 with positive blood-cultures

CASE 40 —Staphylococcal pyæmia resulting from cervical abscess after an insect bite Blood cultures grew *Staph aureus* throughout treatment Local cellulitis improved after incision and drainage Soon very ill with pneumonia and meningitic symptoms Failure with sulphapyridine (24 g), sulphathiazole (12 g intravenously plus 66 g by mouth in 6 days) together with staphylococcal antitoxin (120,000 units intravenously and intramuscularly over 4 days) Free sulphathiazole in blood (3 hours after 2 g) was 2 9 mg per 100 c cm Did not improve and died a week later Autopsy bacterial endocarditis with multiple pyæmic abscesses

CASE 41 —Staphylococcal pyæmia and suppurative arthritis of knee following infected graze Blood cultures grew *Staph aureus* throughout treatment Pneumonia and multiple subcutaneous abscesses Sulphapyridine (28 g in 3 days) given without effect From 11th to 13th day of disease 50 g of sulphathiazole given by continuous intravenous drip, but patient died after 4 days Free sulphathiazole in blood 11 2 mg per 100 c cm

Both these cases had advanced septicæmia with pyæmic abscesses before sulphathiazole therapy was begun

CASE 42 —Perinephric abscess following furunculosis Sterile blood culture Pyrexia for a month in hospital Sulphathiazole (6 g intravenously plus 54 g by mouth in 5 days), followed by striking improvement, patient becoming permanently apyrexial and mass disappearing from loin in a few days

CASE 43 —Staphylococcal pelvic abscess and cellulitis following septic abortion Blood-culture negative Very ill, pyrexia for a month before abscess began to discharge per vaginam Discharge ceased after 2 days, but pyrexia remained high and pelvic mass large Sulphathiazole then given (2 g intravenously plus 42 g by mouth in 4 days), striking improvement Permanent apyrexia after 6 days when mass was subsiding satisfactorily

CASE 44 —Large alveolar abscess pointing in submaxillary region was incised, but ceased to drain and pyrexia remained high After sulphathiazole (18 g by continuous intravenous drip plus 24 g by mouth in 3 days) temperature fell rapidly in 12 hours and swelling subsided, with slight discharge only, in 48 hours Blood culture sterile Pus contained *Staph aureus*

CASE 45 —Breast abscess rapidly subsided after single aspiration, sulphathiazole (36 g in 3 days) being given immediately after aspiration Pus contained *Staph aureus*

CASE 46 —Whitlow of finger following abrasion Pus contained *Staph aureus* Sulphathiazole given (36 g in 3 days), Whitlow incised next day, no pus found Inflammation subsided after a few days

CASE 47 —Baby aged 3 weeks with pneumonia, staphylococcal abscesses of thigh and wrist, both incised Sulphathiazole (3 g by mouth followed by 3 g intravenously in 2 days) was without effect and the baby died after 2 days

CASE 48 —Staphylococcal peritonitis in baby 8 days old, was operated on and then given sulphathiazole (3 g in 3 days) No improvement, death

CASE 49 —Staphylococcal pyopneumothorax complicating phthisis Sulphathiazole given before drainage without benefit

CASE 50 —Alveolar abscess of cheek Unaffected by sulphathiazole, but cleared up rapidly after drainage

DISCUSSION

In this series 11 patients had positive blood-cultures, present on more than one occasion in all of them, no blood-cultures were done on cases 5 and 47 although clinically they had septicæmia Of these 13 patients, 7 died In only 1 of the fatal cases (case 3) and 2 of the non-fatal cases (23 and 25) was the blood-culture made sterile during treatment with sulphathiazole Antitoxin was given simultaneously with sulphathiazole in 1 case, and after a course of the drug in 3 others, without apparent effect In only 1 case (24) was antitoxin successful after sulphathiazole had produced only temporary improvement

In 8 cases of osteomyelitis, pyrexia was reduced while sulphathiazole was being given, but surgical drainage had already been carried out in 6 of them Cases 7 and 10, which showed no improvement on the drug, rapidly responded when surgically drained In cases 16 and 17, which had already been operated on before sulphathiazole administration, the pyrexia did not settle when the drug was given, indeed, in case 17 drug fever developed rapidly

All cases of carbuncle with sterile blood-culture, except case 25, cleared up satisfactorily, the pyrexial period varying between 3 and 7 days from the time of starting the drug

In the miscellaneous group 5 cases cleared up rapidly as soon as sulphathiazole was started Probably in all of them the actual amount of suppuration was small, the condition present being mainly cellulitis The 2 cases in which the drug was tried initially without effect responded readily to surgical drainage

In many cases the drug appeared to have no dramatic effect on the local disease In osteomyelitis the condition progressed to suppuration, and in cases 1 and 4 extensive areas of bone were involved and sequestra were seen radiographically Cases 7 and 11 appeared to make a complete recovery without radiological evidence of bone disease, but in these the focus in the bone may have been small Most carbuncles appear to have run the usual course, though they did not extend, as a rule, once the patient had begun taking the drug, and 2 of the facial ones subsided without obvious sloughs to the depths of the exuberant spongy granulation tissue Efforts were therefore made to reduce the tissue to a flat area, less inviting to bacterial growth, by pressure bandages of tulle gras over which saline was applied Ten-minute dressings of eusol or spirit were sometimes applied for two hours, and ultra-violet light through paraffin was tried In those days only 10% of the grafts took properly and the percentage of failures was in the forties The introduction of the sulphonamides altered everything Now ordinary agents are used to get rid of sloughs and produce "social cleanliness" in the wound if sulphonamide is used from the first the sloughs may take longer to separate Then sulphonamide powder is gently massaged into the granulations with a spatula which seems to be a little more efficient than insufflation and a dressing of tulle gras and saline is applied The powder is put on daily Before, at and after operation the drugs are given by mouth The granulations are excised and the powder massaged into the serum in the wound Over the whole of this area the skin graft is applied, and pressure dressings put on and left for seven days The number of cases is now over 40 and (apart from the one failure who received no sulphanilamide by mouth) there has been no cellulitis or infection and at least 75% of the grafts have taken The sulphanilamide beneath the graft does not prejudice the take, even though it may be ½ in thick The blood sulphonamide rises to about 3 or 4 mg per c cm and there has been no intoxication All this is extremely encouraging in enabling the surgeon to apply the finest of all dressings—the patient's own skin—before fibrosis and contractures appear

Dr **Frank Hawking** drew attention to the possible use of sulphonamide compounds in preventing gas gangrene Experimental wounds were made in guineapigs and infected with 10,000 lethal doses of *Cl welchii* or *Cl septique* Insertion of sulphonamide compounds at the same time as the infection saved up to 75% of the animals Sulphathiazole was the most effective compound, sulphapyridine was moderately effective, sulphanilamide was good against *Cl welchii* but had no action against *Cl septique* Since sulphathiazole is expensive, a mixture of equal parts of sulphanilamide and sulphathiazole can be used, in experimental wounds this was almost effective as pure sulphathiazole None of the compounds had much action against *Cl œdematiens* In clinical practice, the sulphonamide compound should be reinforced by the prophylactic injection of antitoxin When treatment was delayed for 2 hours the results were much less good, when it was delayed 6 hours all the animals died Therefore treatment should be applied as early as possible Oral treatment was less efficacious than local treatment A number of casualties have now been treated with sulphanilamide or sulphathiazole and have done very well The blood concentration is always low, usually less than 1 mg per 100 c cm In the guineapig wounds sulphanilamide produces a high concentration (about 1000 mg per 100 c cm) but it is all gone within 24 hours, sulphapyridine persists for 7–10 days but the concentration is only 40 mg per 100 c cm, sulphathiazole persists for 4–5 days and the concentration is about 100 mg per 100 c cm Sulphanilamide travels quickly from one end of a wound to the other sulphathiazole fairly quickly, but sulphapyridine travels slowly, and the concentration at the far end is never high. Experiments were made on the diffusion of these compounds through the abdominal wall of the rat from within outwards the wall being 2–3 mm thick. If the tissue is dead sulphanilamide passes through fairly well and produces a fairly high concentration (26 mg per 100 c cm) on the outside but it requires 24 hours to do so, if the tissue is alive, however, with an active circulation the concentration on the outside is never greater than in the body as a whole Thus, if a sulphonamide compound is placed in the cavity of a wound, it will pass down into the crevices, and it will slowly diffuse into pieces of dead tissue But the concentration which it produces in adjacent living tissue will be no higher than that in the body as a whole In order to reach this living tissue the local application should be supplemented by oral administration Finally Dr Hawking referred to previous statements that pus would inhibit the bacteriostatic action exerted by sulphanilamide on bacteria in vitro He treated several wounds containing thick pus by the insertion of sulphathiazole and found that the pus became sterile

Dr **C A Green** said that there were few reports on the effect of body reactions on therapy He described work with *Streptococcus hæmolyticus* in rabbits and Prontosil Soluble In the first experiment the effect of therapy on the response to streptolysin O in the form of culture filtrates was studied in two rabbits There was no indication that prontosil had any effect In a second experiment the effect of prontosil therapy on the antistreptolysin O response in experimental infection by hæmolytic streptococci was studied in four rabbits Despite prontosil therapy the usual reduction in the latent interval before the appearance of the response was noted, and a higher titre was reached than in the original course This combined result was considered definite evidence of the absence of any interference with production of antistreptolysin O as a consequence of the exhibition of prontosil The results indicated little of any interference with production of antistreptolysin O in experimental animals as a result of the simultaneous injection of prontosil These observations might throw some light on the disappointing results of prontosil in the treatment of acute rheumatism

Major **A E Francis** described the results of local sulphanilamide treatment in forty-seven patients with 77 wounds infected with hæmolytic streptococci In twenty cases with 31 wounds infected with group-A hæmolytic streptococci the organisms disappeared entirely with local therapy only A further three cases with 8 wounds received oral as well as local treatment one case (compound fracture of the mandible) received oral treatment only In eleven other cases, with originally 22 infected wounds, 15 wounds became reinfected or resisted treatment Of these two cases had streptococci which were resistant to sulphanilamide in vitro, four cases became reinfected while on leave, one case was found to have an undrained pocket of pus, while in three cases the streptococci reappeared after operations Two cases with group-C streptococci had responded satisfactorily but five cases infected with group D had all resisted treatment, three of them actually developing the infection while under sulphanilamide therapy Three group-G infections had responded well Much exudate prevented the action of sulphanilamide The intelligent coöperation of the staff was essential The drug must not be applied over a dried film of exudate without being moistened with saline Sometimes eusol had been put on top of sulphanilamide, the resulting compound was inactive Bacteria sometimes could be recovered from the surrounding skin after they had disappeared from the wound The skin should therefore be treated with an antiseptic, such as Dettol cream The skin sometimes became rather macerated from the saline packs, but recovered if these were left off for a day

Dr **K Wallersteiner** pointed out the difficulties in estimating the efficiency of these drugs, and described the tests in use with the new Bayer compounds now becoming available One new compound with two sulphanilamide radicles had proved to have great affinity for fibroblasts and to be very efficient A derivative of trypan blue with two sulphanilamide groups had been developed for external application

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IN their fourteenth annual report the Universities Federation for Animal Welfare (UFAW) admit that they are carrying on under difficulties Their main stronghold, the University of London has been scattered through the provinces, their honorary officers are preoccupied with service duties Since the report was written their London offices have been wrecked by enemy action But UFAW's morale is unshaken Though the war may have restricted their opportunities, under their new president, Sir Peter Chalmers Mitchell, F R S, they are resolute that they will lose no chance of advancing a step here and a step there The scientific investigations committee has been active and new members have been gained, especially in the University of Oxford For the present the work is being carried on from the home of the general secretary and all letters should be addressed to Hall Place, Lyndhurst Terrace, London, N W 3

Medical Societies

ROYAL SOCIETY OF MEDICINE

AT a meeting of the Section of Therapeutics and Pharmacology on Feb 11, with Sir WILLIAM WILLCOX, the president in the chair, a discussion on

Chemotherapy and Wound Infection

was opened by Colonel LEONARD COLEBROOK He said that the struggle against bacterial infection during the last fifty years had taken three roads active and passive immunisation, including surgical drainage, internal antisepsis, and external antiseptics The first reports on red prontosil did not suggest that it would be of great value as an external antiseptic, but later developments showed that it was reduced in the body to sulphanilamide, which had a considerable effect on bacteria It is extremely diffusible, getting quickly into all the tissues, the cerebrospinal fluid and the vitreous and aqueous humours It has a very low affinity for the tissues and serum proteins, and so does not lose potency as the older antiseptics do, 90% or more is excreted in the urine It is innocuous for fibroblasts and leucocytes in high concentration, and is readily absorbed from wounds All these properties, with its powerful action on the streptococcus, make it probable that this drug has real value as an external antiseptic, but this cannot yet be regarded as quite certain Every wound produced by violence is really a honeycomb of spaces filled with serous fluid which is a good culture medium for certain pathogens—called "serophytes" by Sir Almroth Wright The surgeon cannot obliterate all these dead spaces, and until recently the medium in them could not be rendered uncongenial to organisms Solid sulphanilamide introduced into the wound will produce a nearly saturated solution for some hours, up to a strength of 1 400 it does not harm leucocytes, though it may prove to do so in higher concentrations Hæmolytic streptococci will be killed completely by it, without leucocytic action Tests of its action on staphylococci and gas-gangrene bacilli are still wanting Aerial bombardment makes it necessary in this war to have a "pansement d'attente," to hold up sepsis until the surgeon can get to work Experiments have shown that the sulphanilamide group offer much hope in this direction, by applying them early the surgeon can hope to prevent many cases of gas gangrene, to prolong the safe period for débridement, to make delayed primary suture possible on many less severe wounds, to reduce the sepsis rate in compound fractures, to get healing in plaster without suppuration, and to do much better with burns Almost all severe, deep burns now go septic, and so do many of the less extensive ones The best hope of avoiding infection lies in learning how to use one of the sulphanilamide group or one of the newer mysterious related substances Some pastes are now ready for clinical trial in burns For deep burns an occlusive dressing to avert loss of plasma protein may be indicated For streptococcal infections of the skin, sulphanilamide has been used locally and internally with good effect, but it has not been much used as a superficial application only Recent tests suggest that it will be successful in this way This kind of treatment will doubtless lend itself to much abuse, and workers must be careful to check their clinical impressions by all available means

Mr EMLYN LEWIS described methods of treatment in wounds and burns, unfortunately in most wound cases the drug had also been given by the mouth to get the maximum effect The powder is worked over the wound with the finger, he said, to cover the surface, without regard to the recommended dose of 15 g The wound is then sutured, or packed with plain or Vaseline gauze Dressings do not need inspection until the fifth day or later *Wounds usually look impressively healthy*, even if the discharge contains organisms they do not seem to affect the course of the case Sometimes at this stage the wound is obliterated in its depth by catgut stitches and the powder reapplied Two cases of gas gangrene were given M & B 693 by mouth and Streptocide locally, and recovered, although they had not had ideal initial surgical treatment A third case, a through and through wound of the left thigh, was found to have much debris in the tissues and gas gangrene at operation twelve hours later After wide excision and irrigation with peroxide, streptocide powder was applied liberally and M & B 693 given by the mouth The wound healed cleanly Streptocide powder had been used locally for burns of the second and third degree, especially on the face, hands and forearms It was covered with Tulle Gras Results were most encouraging, one girl was able to discontinue dressings on the third day, another on the twelfth day In one case only were toxic symptoms seen after external application

Prof ALEXANDER FLEMING described experiments on the relative potency of variants of sulphanilamide Sulphanilamide itself is not, he said, strong enough to deal with pneumococci or staphylococci, sulphapyridine is stronger and can cope with pneumococci, and sulphathiazole is stronger still and so is effective with staphylococci It is a question of strength rather than of specificity One important point is to test the concentration of the drug in the blood periodically, this is too often forgotten What matters is not the amount of drug given but the amount absorbed No drug which destroys leucocytes more readily than bacteria is useful, no pre-sulphanilamide drug passes this test There are certain limitations in local sulphanilamide therapy Many bacteria and bacterial extracts, some peptones and some chemicals inhibit the action of sulphanilamides, pus fluid may have this effect, so if there is much pus in the wound these drugs may be useless Penicillin, made by the mould penicillium, may surpass the sulphanilamides It is troublesome to make and does not keep very well, and so was not used in peace time Recently, workers in Oxford have isolated a solid impure penicillin which has a remarkable effect on infections both clinically and in the laboratory Weight for weight it is four times as potent as sulphathiazole and so about a hundred times as potent as sulphanilamide The active principle, if it could be isolated, would be more potent still It is not inhibited by the factors which inhibit the sulphanilamides Similar substances have been made from other moulds and organisms and all act in enormous dilutions The action of these drugs seems to be bacteriostatic rather than bactericidal—stopping the growth of the bacteria so that the body cells and fluids will kill them The addition of vaccine treatment to M & B 693 might turn the scale between life and death A small dose of vaccine or the injection of hypertonic salt might be tried in those cases where streptococci do not disappear as they should The combination of immunotherapy and chemotherapy is a good one

Mr RAINSFORD MOWLEM *read a* paper on *sulphanil*amide in skin grafting which he described as a series of impressions He had tried to subject his practice to as severe a test as possible and so far had had only one apparent failure Most of his patients were bombed civilians with multiple injuries needing skin grafts—burns and extensive lacerations They are, he said, usually heavily infected on admission to the unit, though often there are no clinical manifestations of the infection, it nevertheless prevents surgical intervention and causes a high percentage of infected fingers among the nurses In the past the effort to get a clean granulated area for grafting depended mainly on the bacteriostatic powers of the body No antiseptic could be expected to penetrate

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Reviews of Books

The Factors of the Mind

An Introduction to Factor analysis in Psychology By Cyril Burt, M A, D Sc Oxfd, professor of psychology in the University of London London University of London Press Pp 509 21*s*

The factors of the mind, in Professor Burt's sense of the word, are qualities the existence of which can be deduced from the results of different tests applied to suitable groups of subjects Thus Spearman's *g* is a general factor present in all intellectual processes, as distinct from specific factors, like verbal or arithmetical ability, which occur only within a limited range of processes Factor analysis is the technique by which logical and mathematical principles are applied to the figures obtained from psychological tests first used on empirical grounds and presumed to measure some factors of the mind The possibility of measuring these factors is still criticised, and Professor Burt is at pains to defend it He notes that the relative order of merit of pupils, as judged by class-teachers, may prove incapable of useful analysis because " merit " denotes a complex and therefore doubtful quality , but it may be analysable into two or more factors, such as intelligence and industry and perhaps speed of memorisation, that are independent of each other and can usefully be arranged in a linear series He claims, in face of opposition both ancient and modern, that his material is fit subject matter for science because its agreement with facts is demonstrated by the power of prediction , for, says he, " the psychologist's prediction of what a child will do in certain tests tomorrow is far more accurate than the meteorologist's predictions of what tomorrow's weather will be " Practice and theory are closely linked in the book, a pretty problem being given by that common experiment in which a group of persons is asked to rank a series of English compositions in order of merit If the group are school-children, and the compositions are by authors of known repute, then we incline to treat the results as a measure of the children's powers of appreciation , but if the compositions are children's essays then grown-up judges in their pride treat the results as a measure of the value of the essays The factorial analyst would say that the results express the interaction between the test stimuli and the qualities of the judges , which of these we treat as constants and which as variables depends upon what we are trying to study and how we plan the experiment

This book deals with only a part of a subject in which Professor Burt is an acknowledged master It must be confessed that the mathematical descriptions and discussions are not easily within the scope of many of us, but now that the connexion between emotional make-up and physical disorders is becoming recognised and clinically studied we must keep a watchful eye on such work as this Those concerned, for example, in working out statistically the relation between temperamental qualities and the incidence of peptic ulcer might find help and confirmation in the use of factor-analysis, for Professor Burt indicates that his theorems are applicable to the factorisation not only of intellectual but of emotional, moral, or temperamental traits

The Foot and Ankle

By Philip Lewin, M D , F A C S , associate professor of bone and joint surgery, Northwestern University medical school , professor of orthopædic surgery, post graduate medical school of Cook County Hospital London Henry *Kimpton* Pp 620 *42s*

Dr Lewin has written a book on the foot and ankle for " the student, general practitioner, industrial surgeon and the younger orthopædic surgeon " , a truly formidable task In the opening chapters he gives an excellent account of the practical anatomy and the physiology and mechanics of the normal foot and ankle, after which he discusses the abnormalities which may occur These chapters are followed by a detailed description of that often neglected article, the shoe, and clear diagrams are given to show modifications of the ordinary commercial shoe for the relief of various orthopædic conditions In succeeding chapters most of the known disorders o foot and ankle are discussed, but Dr Lewin would been more helpful if he had given more details of acc methods of treatment Thus in the chapter on pl technique Bohler's non-padded plaster is dismisse three lines, and fractures and dislocations are also with somewhat briefly, though they are well illust by line drawings No details are given of the co application of plaster-of-paris, which is so ess to the maintenance of reduction and the avoidan many complications, and in a short section on mi orthopædics no mention is made of the use of the sul amide drugs in the treatment of infected wounds is the application to military surgery of the wo Winnett Orr and Trueta referred to Poliomyel well described, a detailed account being given o symptoms, differential diagnosis and treatment, the section on the treatment of the residual par is overloaded , the author refers to at least eight of arthrodesis of the tarsal joints Circulatory turbances of the leg are described in considerable and will help those called on to treat such cond A well-illustrated section on surgical technique is incl The appendix of pedigrams contains several wisec This work sets out to help too many classes of m men and so does not quite take its due place as a book , but if it acts only as a guide to papers and ar and as an outline of many operations and other me of treatment, it will serve a good purpose

Fractures and other Bone and Joint Injuries

(2nd ed) By R Watson Jones, M Ch (Orth) F R C S Edinburgh E and S Livingstone P *50s*

This work is well arranged, fully and aptly illust and written in an epigrammatic style which does than clothe the bones For the postgraduate it m called an essential book, providing as it does a co hensive survey based on unrivalled clinical expe The well-known views of Mr Watson-Jones ma secure general agreement—he knows that many geons would be critical of the method he advocat treatment of fractures of the shaft of the femur that he tabulates such criticisms and answers t but they are stimulating views and above all or

Diseases of the Peripheral Arteries

Diagnosis and Treatment (2nd ed) By Saul S Sa M D London Humphrey Milford, Oxford Un *Press Pp 372 31s 6d*

In this edition Dr Samuels provides further ev of the value of conservatism in the treatment of per arterial disease , major amputation has been re in only one out of his 350 cases of thromboa obliterans, and this experience justifies the publ of the details of the therapy employed The doubts the value not only of surgery but also more elaborate physiotherapy which has been adv recently for obliterative arteritis, and confin attention almost entirely to stopping smoking, posture of the affected limb including postural ex hypertonic solutions by intravenous injection, a local application of mild antiseptics to gangrenous He makes useful suggestions for the treatment o the control of which is the most serious problem management of patients submitted to non-op treatment He attaches much importance to metry in the diagnosis and prognosis of per vascular disease, more especially when it is arteriosclerotic type , and certainly the method to be employed more extensively than it is at p Fuller after-history of feet which have healed Dr Samuels's regime would be welcome, and so clearer indication of the limitations of the method arteriosclerotic group At the end of the book th short chapters on Raynaud's disease, erythrome acrocyanosis, periarteritis nodosa, essential thr philia, embolism, cervical rib, axillary thro frostbite, ergotism and aneurysms, but the allowed has scarcely been sufficient to make the ac in any way comparable in value to that of o obliterative arteritis

THE LANCET

LONDON SATURDAY, MARCH 1 1941

WAR DOCTOR

THE rise of the Army Medical Service to its full tature in the last war was one of the landmarks in he history of medicine and a significant event in the fe of our people This is no mere rhetoric, no aporising of a self-conscious profession, but the calm udgment of public men who reviewed what had appened at the close of the war Speaking on une 8, 1920, to a great company met to do honour o the medical service of the Army our present PRIME INISTER urged his audience to imagine what it must ave meant to thousands of homes and hundreds of housands of men, in periods of the greatest human eakness and misfortune, to know that the great nass of suffering, misery and shattered figures which epresented war could cast itself upon the mercy of he Royal Army Medical Corps, never to find that nercy lacking Lord MIDLETON who presided emarked that this was the only occasion since the rmistice when a particular branch of the Army had een the object of public ovation And if further onfirmation is needed it may be found in the preface o the first chapter of the Medical History of the Great War which twice recalls "the singular reedom of the Army Medical Service from adverse riticism" when in previous wars the breakdowns n arrangements for the care of sick and wounded ave birth to masses of printed evidence in eports of royal commissions and parliamentary nquiries

How the transformation was brought about bears epetition It was SIDNEY HERBERT who after the Crimean War gave the lead in Army medical reform But nothing much was done until, as KEOGH used to ay, God sent the cause of medical reform two men—MIDLETON and HALDANE Lord MIDLETON gave the R.A.M.C the opportunity for postgraduate study which assured their scientific position Lord HALDANE had brought the regular medical officer into close ouch with the civilian branch of his profession MIDLETON on that occasion himself told the story There were, he said, men in that room who could emember the days when in a large cantonment the only site assigned for a hospital where capital operations were to be performed was a vacant spot between a dust-heap and a slaughter-house, and when the last man to hear of any intended move of the Army was the senior medical officer In every war up to that war the medical service had been hurried into the field, although starved in numbers for peace service insufficiently paid, without leisure or opportunity for scientific training, with scant opportunity for practising modern surgery, separated by a water-tight partition from the great civil profession which could be its only effective reserve But nowadays, he went on, the men who held the commands in peace were so chosen as to hold the same commands in war The equipment designed for peace was the same as the equipment for war The gap between civilian and professional soldier was so bridged over that the professional service could be developed into a national force Mr CHURCHILL, confessing himself as one who had in former days been Lord MIDLETON's critic, "youthful ignorant and hard," rejoiced in having the opportunity of saying that his work in reorganisation had been signally vindicated

What was true of the last war is true also of this, may be in even larger measure There has been little if any criticism of the teamwork of the Army medical department and when the carnage is over there will be thousands of soldiers and soldiers' families who will look back with quiet thankfulness on what their medical service did for them It is not from the soldier that the complaint may come but from the civilians at the front, for in bridging the gap between the civilian and professional soldier MIDLETON made it possible for enough of the profession to pass over on to the soldier's side to starve the civilian of medical aid—and this is what is happening It was MIDLETON's service to bridge the gap for one way traffic ; it may well be for a statesman of equal calibre to turn the bridge into a broad thoroughfare that can serve an all-in war Heretofore in its immediate medical preparedness for war the continental system had the advantage For a vast standing army the professional soldier's doctor is a necessity and he was segregated at an early stage in his career Chemistry and physics behind him, the French medical student who elected to go into the army entered the Val-de-Grâce where he learnt soldiering and doctoring side by side and became a medical soldier rather than a military doctor This was never the case here where medicine was more jealous of her essential nature and where six or seven years of the Hippocratic discipline deprived a man of any leaning towards other gods And happy for us that it was so, for the total war has knocked the bottom out of the continental system ; where every citizen is a potential war casualty it is a question of war doctor not soldier's doctor Nor is the exchange impracticable, or even difficult, in a country with a genius for solving problems as they arise True there are four services competing for medical personnel although, as we have said before, there is here no sordid clash of personal interest These medical services are responsible to four state departments, three of defence and one of health, and we do most urgently require a medical war cabinet, with executive power, to reconcile their needs (and perhaps those of the Dominions too) and to ensure that enough of the right men are in the right place, whatever may befall us Let the PRIME MINISTER, who is still youthful and even stubborn, but very knowing, let him give the medical services a common council, presided over by a man of his own choosing

SEDATION OF THE BOWEL

THE value of opium in checking diarrhœa has been appreciated for long enough, but only comparatively recently have we begun to understand the mechanism of its action The slow accumulation of knowledge has not been due to sloth ; on the contrary, a vast amount of published work bears witness to our

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RESEARCH IN GENERAL PRACTICE

In a story which gave many of us a thrill forty years o, "Ships that pass in the Night," BEATRICE ARRADEN wrote a charming parable It concerned man who from childhood had dreamed of finding the mple of the ideal which he thought was placed on the mmit of an almost inaccessible mountain After ars of effort he at last scaled the mountain to learn at this was not the place, the temple was in the lley he had left The practitioner who "has no portunity for research" might consider this tale n another page two general practitioners and an stetric surgeon have drawn some useful lessons from e analysis of their cases of breech labour Their mbers are small, but they show clearly that although is faulty presentation in no way affects the chances the mother it is a catastrophe for the child, and ey make out a good case for their conclusion that if rsion fails cæsarean section is the treatment of oice, especially in primigravidæ or where there is me degree of pelvic contraction Nothing spec- cular about the analysis of such records, none of the lendid ritual of white-coated priests inoculating ineapigs, not even the mysterious but impressive gebra of super-statisticians Yet it should be membered that the father of medical statistics was ity tradesman who knew no algebra at all, that in e enlightened 19th century it was not a highly ined "scientist" but a licentiate of the Society of othecaries who left general practice to create the st system of medical statistics in the world, and that e most original contribution to epidemiology of cent years was made by a general practitioner in ensleydale It is tempting to emulate Bishop ERKELEY's "Querist" and submit some interroga- ries Do we identify the technically difficult with the portant ? Do we think that no important truths n be discovered by simple methods ? Is it possible at if medical neighbours and friends pooled their perience discoveries might be made which had caped the Ministry of Health and the research units the teaching hospitals ? The times in which we re, when we are all thrown back on our own resources, d when so much is happening that the "experts" e too busy to record, sharpen the point of these estions In many ways we are forced to live more mply, to do without many things we thought were ecessary Intellectual snobbishness, reliance on perts, fear of doing simple things, might well be dded to the list of contraband of war

We must not underestimate the difficulties of the eneral practitioner when it comes to preparing his cords for publication His patients will not ppreciate the extra investigations and the thorough quiry needed to make a clinical case complete, gain, these things take time, and must be added to a aily round which may already be long enough, xamination of a stool in general practice is no simple atter of "Please send fæcal specimen to bact lab" n the bed-letter, but a complicated process, from btaining a specimen pot and instructing an amateur its use, to packing and despatching it to the boratory When all is done there is the writing up such a form as to catch the critical eye of some ditor But our peripatetic correspondent was dely wrong when he suggested last week that the edical journals look askance at such papers Alas that there are so few for them to look askance at Papers like that of Mr GAIRDNER and Dr and Mrs JACKSON are what we are in urgent need of, not only in obstetrics but in the whole field of medicine Many doctors in insurance practice, sometimes with the encouragement of the regional medical officer, have made records which have proved well worth the time expended on them and should be analysed for the benefit of the rest of the profession To get their full value, however, some pooling would be necessary, and here the R M O (when he returns) could help, as well as by initiating special inquiries For ailments outside the insurance sphere the stimulus might come from the hospital consultants One can foresee the time when the riddle of cramp, of gastric influenza or of neonatal hæmorrhage is solved by the Blankshire group

Annotations

MEDICAL TREATMENT OF FRACTURES

OPINIONS on the value of biochemical methods in accelerating the union of fractures and in the treatment of established non union vary between the enthusiastic and the dourly sceptical Surgeons in this country, who tend in the main to be conservatively attached to effective and continued immobilisation, will probably be a little suspicious of what C F and R C Nelson[1] term "the medical management of fractures" They describe the use of vitamins and hormones in the treatment of 1000 cases, the objective being primary healing with a minimum of callus The serum calcium and phosphorus were estimated at the outset by a simple technique in order to provide the basis for treatment, and it was found that the former was low in 85% of all recent cases Measures to raise the calcium content are advocated therefore whenever laboratory facilities are not available These measures include the giving of two pints of milk daily, the administration of calcium gluconate by mouth and subcutaneously, and the injection of parathyroid extract at intervals of a few days It is maintained that by these methods the serum calcium can be raised to the desired level, the effect being demonstrable within 10–15 days Should the serum phosphorus be low liver, eggs, fish and cheese are included in the diet and vitamin D is given in doses up to 3000 units daily The Nelsons point out that in normal cases vitamin D raises the phosphorus level unduly and delays union, it should never be given routinely but only in the 25% of individuals with an initially subnormal value During the period of treatment ♏15–20 of dilute hydrochloric acid is given with meals to facilitate the absorption of calcium and phosphorus from the bowel, and the urine must be kept acid throughout in order to avoid the precipitation of calcium in the urinary tract The object of this regime is to establish a serum calcium of 10 5–12 mg and a serum phosphorus of 3 5–4 mg per 100 c cm, and to maintain this 3 1 ratio For the simple Colles fracture and comparable injuries dietary methods only are employed, and where late absorption is feared, as in fractures of the femoral neck, dietary control is continued for many months In suspected acromegaly or myxœdema, or when the basal metabolic rate is low, thyroid extract is given, and iodine is administered to thyrotoxic cases The American workers claim not only to have prevented non-union in recent cases but to have effected sound union in delayed cases even without strict immobilisation However, their series lacks controls and no reference is made to the mechanical and vascular factors in the process of healing In this country R T Stirling[2] has given some attention to the biochemical aspects of diligence in seeking the explanation of this phenomenon For many years the issue was confused by the workers who could not see beyond the depressant effect of morphine on the central nervous system They assumed too readily that the constipation following morphine must be due to depression of the bowel resulting in diminished peristalsis From faulty premise to prolixity is an easy step, and it is significant that by 1920 UHLMANN and ABELIN[1] were able to quote no fewer than 314 contributions to the controversy that was still raging over the mode of action of morphine on the bowel

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[1] *J Amer med Ass* Jan 18, 1941, p 184

[2] See *Lancet*, 1939, 2, 428

The earlier workers in this field held that the alkaloid acted by depression of the reflexes arising in the plexuses of Auerbach and Meissner NOTHNAGEL[2], on the other hand, postulated central stimulation of the inhibitory splanchnic fibres Other investigators failed to confirm that depression of the bowel actually occurred, and some unexpected observations were made, notably that morphine still produced constipation even when the extrinsic nerve-supply to the bowel was severed, and, far from depressing the bowel-wall, experiments on excised intestine showed that the predominating effect of morphine was stimulation [3] In retrospect it seems curious that the dispute should have lasted so long, when such broad hints as to the probable explanation were contained in the already published researches on the effects of this alkaloid on the stomach Thus, ZEHBE[4] as early as 1913 demonstrated radiographically in man persistent closure of the prepyloric ring after the administration of morphine, and, working on animals, MAGNUS[5] had demonstrated the same action in 1908 Despite the excellence of MAGNUS's pioneer work in this direction, he may now be accused of drawing a red herring across the path by his suggestion that the most important factor in morphine constipation was the hold-up of food at the prepyloric ring That this is a contributory cause cannot be denied, but it remained for PLANT and MILLER[6] to demonstrate conclusively the nature of the stimulating effect of morphine on the bowel in dogs and in man, and to prove that this action is the main cause of morphine constipation In dogs their results were obtained by experimental methods involving the use of the Thiry-Vella fistula, in man their observations were made on patients with thin-walled herniæ of the abdominal parietes, and by noting pressure changes in permanent fistulæ After hypodermic injection of morphine there is a great increase of tone in the small intestine and a simultaneous rise in peristaltic and segmental activity The augmented propulsive movements last only about half an hour and thereafter they are depressed for several hours In man the resultant effect of these changes is intestinal stasis Except where there is idiosyncrasy to the drug spasticity of the bowel dominates the pharmacological picture, and the passage of the intestinal contents is consequently hindered despite the initially enhanced peristaltic activity The diarrhœa which not infrequently occurs in dogs and which is a rare manifestation of idiosyncrasy in man is probably explained by a fleeting preponderance of the increase in peristaltic activity over intestinal spasticity

Although these results have helped to clarify our views on the main pharmacological actions of morphine on the alimentary canal, there remain for solution many minor problems Of these, the study of morphine-atropine antagonism is interesting to the laboratory worker and not unimportant to the clinician The evidence in favour of a purely local action of morphine on the small intestine includes the statement that increased tonus persists even after atropinisation It now appears that this applies only to small or moderate doses of atropine, for more recent work by KANAN[7] and by GRUBER and others[8] reveals that large doses do abolish the intestinal spasticity produced by morphine According to ADLER and IVY[9] the triple stimulating effect of morphine on the ileum is seen also in the colon, but morphine atropine antagonism is apparently not so complete in this part of the bowel The propulsive movements produced by morphine in the colon can be abolished by the previous administration of atropine, and by careful adjustment of the proportions of the two drugs both the propulsive and non-propulsive side effects of morphine can be eliminated without interfering with the increased spasticity of the colon At their face value, these findings suggest that there is some justification for using atropine as an adjuvant to morphine when intestinal quiescence is desired Variation in the susceptibility of different species of animals to drugs accounts for the heavy dosage of morphine and atropine used in the experiments on dogs (the corresponding amounts for a man of average weight would be about gr 1 of morphine and gr $\frac{1}{60}$ of atropine) These experimental results must therefore be regarded only as pointers, and the next step is to test their applicability to man And here it must be emphasised that not only are there often unexpected differences between human and animal pharmacology but where the vegetative nervous system is concerned responses to drugs are sometimes amphoteric, that is to say, the response can be reversed by altering the dosage [10] In this connexion, the experimental work of UHLMANN and ABELIN[1] is of special importance for they showed that while large doses of morphine increase the tone and contractions of the intestine very small amounts reduce both forms of activity Whatever may be the explanation of this, it seems that work on morphine-atropine antagonism is reviving uncertainty as to the relative importance in the genesis of morphine constipation of the intestinal muscle on the one hand and the nerve supply of the bowel on the other The researcher in this sphere is indeed compassed about with a multitude of exasperating difficulties, more particularly if he confines himself to observations on animals There is much to be said for following the example of PLANT and MILLER who supplemented their laboratory findings with observations on patients in the surgical wards

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[1] Uhlmann, F and Abelin J *Z exp Path Therap* 1920 **21**, 58
[2] Nothnagel, H *Arch path Anat* 1882, 89, 2
[3] Baur M *Z ges exp Med* 1924, **44**, 540
[4] Zehbe, M *Ther Mon* 1913 **27** 406
[5] Magnus R *Pflug Arch ges Physiol* 1908, **122**, 210
[6] Plant, O H and Miller, G H *J Pharmacol* 1926 **27** 361
[7] Kanan, M A *Proc Soc exp Biol*, N Y 1937, **36**, 506
[8] Gruber C M, Greene, W W Drayer, C S and Crawford W M *J Pharmacol* 1930 **38**, 389
[9] Adler H F and Ivy A C *Ibid*, 1940 **70**, 154
[10] Sollmann T *Manual of Pharmacology* 1936 Philadelphia, p 335

1922 cases, as were also prostration, anæmia and sting Hæmorrhage under the nails, noted by Sheldon the present epidemic, was not observed in 1922 In 22 the sausage was proved to be the criminal and it is ely to be convicted again this time In pigs the iscles chiefly invaded by the parasite are the diaphragm, ercostals and neck muscles, all of which are com-nly used to make sausages In Wolverhampton busy men eat sausage meat raw in Milford Haven 19 years thirteen infected people ate sausages obtained from particular butcher His pork was raised and slaugh-ed locally, but the farmer who had supplied the lucky pig was not identified At Harpenden the source the infected pork is still uncertain This week cases ve been reported in two districts of Cumberland

One of the chief features of this disease is muscular in and stiffness, and patients may therefore be king treatment for "rheumatism" and may on that ount be mis-diagnosed unless a blood count is done sinophilia is likely to occur towards the end of the first ek and to persist for about six weeks, and recent cases this outbreak have shown 20–70% of eosinophils

HE CONSTITUTIONAL FACTOR IN BEHAVIOUR DISTURBANCE

In assessing the relative importance of environment d constitution in the causation of such abnormalities of haviour as are seen in the psychoneuroses, in subjects th psychopathic personalities, and even in the ychoses, psychologists have been hampered by lequate criteria of constitutional defect It is true t gross somatic signs of degeneration are often present, ticularly in the shape of the face and head, and that etailed family history often gives a clue to causation, t even so the question of the hen and the egg arises most instances environment has played a precipitating t, and some people remain normal only through the bility of their surroundings and the sympathetic skill h which their lives are controlled by others The ctroencephalogram has brought to hand a new index abnormality Cerebral dysfunction—whether caused gross damage, by such agents as intracranial tumours scesses or the toxæmias, or by more subtle states, such the changes underlying epilepsy or the genetic erration in the members of an unstable stock—is sociated with abnormally slow alterations in cerebral ctrical potential which can be readily recorded and easured Lindsley and Cutts[1] have produced further nvincing evidence of the important part played by nstitutional defects in the causation of even the milder ades of behaviour disorders They have taken groups normal children and intelligent healthy adults and have ntrasted their electroencephalograms with those of a oup of 50 behaviour problem children, and of 30 ildren whom they considered to be constitutionally ferior The behaviour problems were sufficiently finite for the children to be admitted to a special spital, and included such things as irritability, restless-ss, temper tantrums, lying, stealing and obscenity ding to unmanageability in the home and delinquency the community The 30 constitutionally inferior ildren were wards of the state who were found to be placeable in foster homes, and who had a poor biological d social heritage By studying the characteristics of fferent groups of abnormal waves in the electro-cephalogram, Lindsley and Cutts found a great eponderance of abnormality both in children with own behaviour disturbance and in those who were nstitutionally inferior For example, while only 3% the normal adults and 30% of normal children showed ore than 5–8 waves a second, 80–90% of the abnormal ildren gave readings above this level Thus abnormal ctroencephalograms were three times as common in ildren with abnormal behaviour as in normal children

This suggests a disturbance of cerebral function which may be important in preventing the abnormal groups from adjusting themselves to their environment particularly if conditions are adverse Similarly, we might expect that the so called normal children who showed evidences of abnormality in the electroencephalogram would be relatively poorer risks in the face of persistent environmental difficulties

MECHANISM OF THE CARPUS

The mechanical anatomy of the carpus has lately been worked out by MacConaill[1] The capitate and hamate move together, as do the lunate and triquetral, while the scaphoid moves sometimes with one row and sometimes with the other The other bones can be excluded from the discussion He regards the capitate as the fixed bone in all movements In dorsal flexion the lunate slides round the capitate and the radius slides round the lunate in even greater degree In the movement from full volar flexion to full dorsal flexion the scaphoid moves on the capitate until the hand is straight, but after this position has been passed these two bones remain fixed while the lunate moves on them both This locking together of the scaphoid and capitate is of supreme importance MacConaill says that the proximal articular surfaces of the hamate and capitate form a screw surface so that in dorsal flexion the scaphoid and lunate are also brought more closely together In fact the bones of the carpus are welded together in dorsiflexion and more loosely packed in volar flexion These observations become of practical value in relation to dislocation of the lunate The methods of reduction that have been advised in the past, apart from operative reduction, are either simple traction or dorsiflexion followed by volar flexion If MacConaill's concept is correct, reduction should be more easily achieved by volar flexion followed by dorsiflexion and this is the method he recommends The movement of volar flexion draws the carpus over the dislocated lunate bone Slight traction on the hand helps this but only the very gentlest pressure on the lunate is required One minute only is needed for recent dislocations The movement of dorsiflexion then retains the bone in its reduced position, and this is the position of the subsequent plaster Late cases will require operative treatment, for in them the space that the lunate should occupy has been partly filled with fibrous tissue Nine cases, six of which had an associated fracture of the scaphoid or triquetral, have been treated by this method with excellent results

REACTIONS TO T A B VACCINE

The case for active immunisation of the civil population against enteric fever has been much discussed in recent months, and despite an official caveat that there were no strong grounds for widespread immunisation many local and hospital authorities have undertaken the inoculation of certain classes of the community against both enteric fever and tetanus One of the objections raised to T A B vaccine is that the local and constitutional reactions which follow the injection result in considerable loss of working time—perhaps more than vaccination would save by preventing enteric fever among an industrial population T A B vaccines may vary in their toxicity, and clinical comparisons of the immunising properties (as measured by agglutinin-formation) and toxicity of different commercial preparations are needed There is no reliable evidence that the use of detoxicated or oral vaccines to avoid reactions gives the same degree of protection as a crude vaccine of the whole organism, but care should be taken to use a mouse-virulent strain of *Bacterium typhosum* *Bact paratyphosum* C is added to certain vaccines, though infections with A and C are extremely rare in this country, and this T A B C vaccine should not be

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Lindsley, D B, Cutts K K *Arch Neurol Psychiat* 1940 44, 1199

[1] MacConaill, M A *J Anat* January 1941, p 166

fractures, and has suggested the prophylactic use of vitamin C in the avoidance of excessive weak callus He does not consider, though, that hormones are of proved value in the ordinary case and attributes the vast majority of instances of non-union to imperfect reduction and faulty immobilisation Nevertheless, the paper by the Nelsons reminds us that there is a chemical as well as a mechanical side to the healing of fractures, and suggests the value of more frequent estimations of the serum calcium and phosphorus in selected cases Where in the absence of some gross endocrine disturbance a significant deficiency is found their regime might be worth trying

NUPERCAINE SPINAL ANÆSTHESIA

ON a total experience of 500 cases Hand and Sise[1] of the Lahey Clinic in Boston and Rapoport[2] of New York speak highly of Nupercaine for spinal anæsthesia, and those in England who are familiar with the drug, under its name of Percaine, will agree These American workers used only the hypobaric 1 1500 solution Nupercaine is readily soluble in water and alcohol, and has the advantage that it may be boiled repeatedly without decomposition An important practical point is that the drug precipitates as a free base in even slightly alkaline solution, and this is indicated by cloudiness Syringes and needles to be used for nupercaine should therefore be washed out immediately beforehand in sterile water acidified with a few drops of acetic acid, or in 1 c cm of the 1 in 1500 solution itself which has a slightly acid reaction Hand and Sise have used the drug in two main groups of cases—for upper abdominal operations expected to take a long time, and for operations in which for positional reasons hypobaric rather than hyperbaric solutions are required They favour fairly heavy premedication, the average adult being given gr 1/3 of Omnopon and gr 1/150 of scopolamine subcutaneously 2 hours before operation and gr 3 of Nembutal by mouth an hour before operation The patient therefore arrives in the operating-theatre very sleepy Just before the spinal anæsthetic is introduced 50 mg of ephedrine sulphate is given intramuscularly The dose of nupercaine is simply calculated from the height and sex of the patient For upper abdominal anæsthesia the injection is made in the 2nd lumbar interspace, 5 c cm of cerebrospinal fluid is discarded and the nupercaine, warmed to or slightly above body temperature, is then injected at 0 5 c cm per sec The injection is made with the patient lying level and on his side and he is then turned face downwards Nupercaine is effective in very dilute solution and its anæsthesia lasts a long time For upper abdominal surgery it gives excellent muscular relaxation, anæsthesia develops within 4–12 min of the injection and lasts for 2–3 hours Supplementary general anæsthesia is valuable in many cases apart from those where the operation is prolonged beyond the duration of the spinal anæsthetic, " to lessen the technical surgical difficulties and to alleviate mental and physical discomfort to the patient " Hand and Sise describe nupercaine as having little or no depressant action on the cardiovascular system and note that " when the changes in blood-pressure occur they are usually sudden and marked, are associated with nausea and retching, and appear to be initiated by manipulation of and traction on the abdominal contents, chiefly in upper abdominal operations " In their experience the early employment of supplementary general anæsthesia (either cyclopropane or intravenous Pentothal) prevents the fall in blood-pressure due to intra abdominal manipulations A rare complication is sudden unconsciousness as the patient is placed in the initial prone position, presumably due to cerebral anæmia, this can be rectified by intravenous injection of a cardiovascular stimulant, for example pitressin and ephedrine Both Rapoport and Hand and Sise use nupercaine spinal anæsthesia largely for " poor risks," but in this country many anæsthetists hold that spinal anæsthesia is best avoided in shocked and toxic patients

The great variety of trade names which may be given to the same drug in different countries is a perpetual source of perplexity to medical men, and makes it unnecessarily difficult to keep abreast with the current literature Here is a case in point on which we have already commented[3] The confusion of percaine with procaine (Novocain) has been known to lead to a fatal issue, though both are safe spinal anæsthetics when given in the correct dose and proper manner The general adoption of the name nupercaine would clearly be an advantage, and there is a good case for the adoption by the various drug supply firms of a single name for each individual drug wherever it is marketed

TRICHINIASIS IN 1922 AND 1941

THE last outbreak of trichiniasis in England was at Milford Haven in 1922, and it is of interest to compare it with the one now in progress at Wolverhampton and Harpenden *In 1922 there were only 13* cases, compared with the 500 already estimated by Sheldon to have occurred in Wolverhampton[4] The diagnosis was made at Milford Haven on the eosinophilia and on the discovery, in two cases, of *Trichinella spiralis* parasites in the fæces The examination was carried out on fairly thick films which were pressed between photographic plates and examined under a very low power Embryos have been isolated from fæces in the present epidemic by Prof R T Leiper, but the diagnosis was originally established by biopsy of muscle, a method which does not seem to have been used in 1922

The eosinophilia in the 1922 epidemic ranged from 15 7 to 39 6%, at Wolverhampton the eosinophil count has been less characteristic, ranging from 1 to 49% in seven cases reported by Lee[5] His figures show that the eosinophil count may vary widely at different stages of the same case—in one from 3 to 33%, in another from 49 to 5% At Harpenden the figures have been steadier ranging, in five cases reported by Garrod and MacLean[6] from 27 to 47% The clinical features of the 1922 epidemic were similar to but not identical with the present ones Patients in 1922 showed gastro intestinal disturbance and epigastric pain at the onset, with vomiting and diarrhœa, in the present epidemic gastro intestinal symptoms have been largely absent, and constipation is the rule, but vomiting has occurred in about a third of the cases towards the middle of the illness In typical cases of both epidemics, an early symptom noted by the patient was swelling of the eyelid and headache Among the 1922 cases the conjunctiva was sometimes red and œdematous, and in the present epidemic the conjunctiva sometimes protrudes through the closed eyelids " as a bulbous watery mass " Muscle pains appear to have been severe in this epidemic, sometimes amounting to agony (three women claimed to prefer labour pains), in 1922 patients noted especially the pain of changing from one position to another, and one man, whose diaphragm was probably affected, complained of great pain in the chest Cough has been a symptom in the recent cases, but in 1922 there was no evidence of lung involvement, there was, however, dyspnœa on movement Signs of damage to the central nervous system were common in both epidemics, varying from transient paresis or depression to severe delirium or signs of a cerebellar lesion Some of the present cases have simulated meningitis, in others the patients have been mentally lethargic and sleepy, this contrasts with insomnia which was a distressing symptom in most of

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[1] Hand, L V and Sise L F, *Surg Gynec Obstet* 1940, 9, 9
[2] Rapoport, G *Anesth & Analges*, 1940, 19, 154–156
[3] *Lancet* 1939 2 944
[4] Sheldon J H *Lancet* Feb 15 p 204
[5] Lee, J E S *Brit med J* Feb 15 p 237
[6] Garrod L P and MacLean, D *Ibid*, p 240

Special Articles

THE EMERGENCY MEDICAL SERVICE

AND THE FUTURE*

By JOHN B HUNTER, M C, M Chir Camb F R C S
RGEON TO KING'S COLLEGE HOSPITAL AND THE ROYAL CHEST HOSPITAL, LONDON, GROUP OFFICER, E.M.S

EARLY in 1939 representatives of the staff of the ondon teaching hospitals met under the title of the ospitals War Committee and decided to ask the oluntary Hospitals Committee to combine with them ıd meet the Ministry of Health to hear what arrangeıents were being made in connexion with the medical rvices if war should break out The Ministry thereupon put forward their sector scheme whereby twelve embers, one from each of the teaching hospitals, should e selected to advise the ministry on hospital arrangeıents in the London area and link the teaching hospitals its casualty scheme England had been divided into idependent regions, each with its own commissioner iperintending all services and a hospital officer to al with the medical problems London presented special problem on account of its size and vulnerbility, and the fact that it had so many hospital beds proportion to those in the home counties A rough nsus of the beds available and buildings suitable for se as hospitals outside London had been made

EARLY PLANS

The Ministry of Health were relying on their hospital fficers to coördinate the arrangements in each region, aking use of the county medical officers of health as eir agents The introduction of the sector system in e London region complicated the picture, and naturally e medical officers of health must have questioned the pearance of those strange creatures, the group officers, their pond, but their goodwill overcame many fficulties The buildings outside London earmarked r use as hospitals were then carrying on their peace-ne function, so that new theatres, X-ray departents and nursing-staff accommodation remained paper hemes and with few exceptions were not started before ar broke out In September, 1939, when these hostals were required, staff quarters were short or uncomrtable, and essential services were inadequate It is fficult to know how this could have been altered, unless e hospitals had been put on a war footing six months more before war broke out It was soon clear that the umber of beds provided would be inadequate if the gure of casualties given by experts was taken as a guide hose figures, we know now, were too high but we had legislate for them Existing beds in provisional ospitals were inadequate, and the Ministry decided to ut up hutted hospitals, using in most places the adinistrative services of existing hospitals or institutions his work was put in hand at once The huts were not ady until after war had broken out, and a second pansion of hutted hospitals was delayed by difficulties obtaining material Groups of beds, or individual uildings, were also earmarked as special centres or ospitals

EQUIPMENT, STAFF AND TRANSPORT

Lists of surgical instruments for a casualty service ere prepared, no attempt was made to provide aborate surgical equipment For years past surgeons ad been using nothing but hand-forged instruments, ıd the surgical instrument makers of the country were able to supply suddenly large quantities of massoduced instruments and to meet at the same time e requirements of an expeditionary force

X-ray apparatus, too, fell short of requirements for e expanded number of beds It was decided that most ospitals would have to be served with portable machines cause it was thought to be impossible to move fixed achines out of London in time Later, plans had to made to house fixed sets, obtained not only from anufacturers in this country but also in America By the generosity of the voluntary hospitals especially those of London, large amounts of equipment were made available Transport was already planned, not only to take casualties from the scene of the incident, but also for inter-hospital evacuation, and these plans are in operation today

Lay staff of the emergency hospitals included expert staff (such as theatre porters and technicians), and domestic staff and porters Expert staff had to be provided from the voluntary hospitals domestic staff and porters by the local authorities owning the hospitals It was clear that nursing staff for the increased number of beds could not be provided on a peace-time basis, and that even on a reduced scale there would be shortage—as has proved to be the case Sector matrons were appointed and a pool of nurses from the various hospitals was made, including the London County Council hospitals These were allocated to the emergency hospitals, together with members of the Civil Nursing Reserve a new body enrolled as a war time measure Outside London the arrangements for nursing were in the hands of the regional hospital officers and the county medical officers of health

In appointing medical staff a rule-of-thumb method could be employed for house-officers but not for more senior grades From time to time the group officers pressed for the medical staff to be embodied in the territorial service, but these recommendations were not favourably received The group officers in the London sectors considered that as the question of remuneration for medical staff affected the whole country, it should be determined by a committee set up by the ministry, in consultation with the advisory committee For many months the question caused much uneasiness and discussion

THE PROOF OF THE PUDDING

All the experience of the Ministry of Health had been associated with peace-time health problems, and their only contact with hospital affairs had been through the county medical officers In starting this new service they harnessed it to existing civil practice, including the voluntary hospital system But there was bound to be some rigidity—a bureaucratic tendency to procrastination that to many people appeared unforgivable

When the service came into being the upgrading in the hospitals was at once begun, and medical and nursing staff reported to their hospitals The staffs of the London hospitals had uprooted themselves and they found themselves in strange surroundings Their clinical work had disappeared, and the theatres and wards among which they found themselves appeared rudimentary, with almost complete absence of those efficient arrangements which were part of their life But they started with goodwill to reproduce in these new hospitals a replica of the old, and their criticism was chiefly constructive

No civilian casualties appeared, there was a lull, and the civilian sick returned to the outpatient departments of the hospitals and arrangements had to be made for their treatment The ministry decided to transfer cases requiring treatment into the sector hospitals These hospitals were not equipped for such work and the influx of civilian sick led to further improvement in the equipment of all departments, and this process still goes on

Certain hospitals were earmarked as convoy hospitals, and to these the Army sick were brought from France, but it was not until the Germans invaded the Low Countries that any wounded were received, and not until the retreat did the service have to deal with large numbers of wounded The work was well done but some medical officers were not aware of the facilities of the service, they had the feeling that if a case came into their hospital it was up to them to treat it, and see it through, rather than to have it transported to another hospital further afield where there was less crowding and perhaps better facilities for special cases

In August and September civilian casualties had to be treated, so that the purpose for which the service was created was at last fulfilled Despite the fact that large numbers of hospital bed were put out of action by bombs, no undue strain was put on the numbers remaining, the emergency hospitals were even able to go on treating the civilian sick confused with the typhoid and cholera vaccine, which as suggested in our issue of Feb 15 (p 234) might be known as "T A B Chol" vaccine

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* Based on a presidential address to the section of surgery of the Royal Society of Medicine given on Feb 5, 1941

Dr Maurice Williams,[1] medical officer of health for Southampton, was among the first to use T A B vaccine on a large scale to protect the civil population, and he has now reported an analysis of the reactions and loss of working time amongst large groups of male and female manual and sedentary workers Only 30 working days were lost among a total of 10,032 persons after a first dose of the Lister T A B C vaccine (0 3 c cm for women and 0 5 c cm for men) Among 1872 male manual workers there was no time lost, although 27 2% of them had combined local and general reactions It is not stated whether or not an effort was made to inoculate mostly at the week end Combined reactions were most frequent among male sedentary workers, 2782 of whom lost 15 working days Female manual and sedentary workers were much alike in the proportion of local and general reactions and in time lost It was noted that those with severe general reactions usually had mild local reactions, but the paucity of reaction in this mass-inoculation of an industrial population should help to lay one of the bogies of the T A B vaccine

THE DISCOVERER OF INSULIN

Sir Frederick Banting, F R S lost his life when the aeroplane in which he was pursuing his research work crashed in Trinity Bay, Newfoundland So ends nobly a meteoric career of great service to suffering humanity The discovery of insulin in 1922 was not an isolated brain-wave, but the painstaking push to a successful issue of a train of thought started thirty years before by Minkowski and Mering when they showed that the pancreas must have an internal secretion dealing with sugar in the blood as well as an external secretion dealing with foodstuffs in the gut But this internal secretion of the islands of Langerhans eluded them as well as Schafer who called it insulin without being able to isolate it The dead pancreas continued to guard its secret although in 1908 Zuelzer and Scott extracted small quantities of an active substance which proved too toxic for human use But Banting was not to be baulked by the failure of others from securing so glittering a prize Macleod's department in Toronto had given him a new technique of estimating minute changes in the blood-sugar Best's skill enabled him to block the external secretion in dogs and recover from the still intact islands an extract which cured experimentally diabetic dogs Armed with this confidence Banting and Best quickly verified the suspicion that the insulin was there in the dead pancreas all right and could be extracted with alcohol before its destruction by ferments And finally Collip purified the extract from its toxic constituents so that it could safely be given to patients It all seems so simple now—the relentless pursuit of truth to its logical conclusion Banting deserves his place in the long gallery of those who have found a remedy for disease, he is one of that smaller band who found a talisman which may open other doors

BLEACH CREAM FOR THE MAN IN THE STREET

THE Minister of Home Security has sent letters to local authorities asking them to request the help of all pharmacies in Great Britain in a scheme for making bleach cream available for members of the public if the enemy uses blister gas The scheme is a simple one The proprietor of each pharmacy, having been provided by the local authority with two enamel pails and 14 lb of tropical bleach, is to be asked, as soon as gas is used, to mix bleach cream in the pails, and if blister-gas is being dropped in the vicinity to place the pails of cream on the pavement outside his shop with a poster instructing the public how to apply it It has been agreed with the Pharmaceutical Society, whose ready collaboration the Minister of Home Security acknowledges, that pharmacists should be asked to perform this service without payment, as part of their contribution to the national effort The Minister's letter says "Gas has not been used and the scheme is therefore precautionary only It has been decided to ask pharmacists to cooperate because they possess the necessary technical skill for making the cream and their pharmacies are well spread over all populous areas" It is also stated that anti-gas ointment No 2 (chloramine) is now available for commercial sale at controlled prices from manufacturers who have received special permission from the Ministry As supplies become more freely available, it is hoped that pharmacists will stock this ointment, but it cannot be expected that more than a limited proportion of the public will ever be able to buy their own supplies The scheme for bleach cream i a supplementary safeguard

ENDEMIC FLUOROSIS

IN a leading article on p 216 of our issue of Feb 15 we were able to give first-hand information about the distribution of fluorine-bearing minerals and how the fluorine may find its way into drinking-water or into the fumes from kilns and so give rise to signs of fluoro in man and animals The geological information was supplied for publication by Mr C N Bromehead w the permission of the director of the Geological Survey and we regret that no acknowledgement of its source appeared in the article The evidence is noteworthy connecting, for the first time so far as is known, the incidence of fluorosis with the nature of the subsoil of th country

A WORKING DAY

THE gipsy strain in mankind gives little encouragement to those who try to regiment us The eight hour shif so just and symmetrical on paper, gets anything but a warm reception from those who are invited to work it Miss F Isabel Taylor, senior deputy chief inspector of factories, reports[1] that when workers had a choice between the two eight-hour shift system and long hours on a single shift, the single shift was generally chosen One reason for this is that people dislike coming on duty at unorthodox times Eight-hour turns are apt to beg at 6 A M and 10 P M, workers—anyhow, at the beg of the war—disliked going about the dark and streets at these hours Again, the eight-hour shift meant a loss of money which would otherwise be earne for overtime, and which was welcome in families wher incomes had been reduced by the recruitment of youn men Sometimes, too, there are insufficient workers in a district to make up even two—much less three—eight hour shifts, and, even where ordinary labourers plentiful, skilled tool setters and other key men scarce, so that it was simply not practicable to two or three shifts instead of one Where long had to be worked, people preferred some long days some short days rather than an arrangement of which left no evening free for shopping or a visit to cinema They even preferred to spend only 10 or minutes over tea, and get home a quarter of an earlier, rather than to take the regulation half hou Perhaps some of them are biologically right in pr variety and dash to ordered regularity The fac hand is probably in greater danger from the effects monotony than is any other kind of worker, and if knows a way to make his life satisfying and various ought to be able to take it

We regret to announce the death on Feb 19, after a accident, of Mr THOMAS HELMER, L D S, deputy secretary of the British Dental Association, at the age of

News also reaches us from America of the death Holland on Dec 16 of EUGEN DUBOIS of Leyden the early 'nineties Professor Dubois discovered canthropus, the famous "missing link," in Java dmitted in place of *Valeriana officinalis* which can be ollected in England from both wild and cultivated lants but was formerly obtained in large quantities rom Belgium and Holland. The opportunity has been aken to make a correction in the official dose of mepacrine hydrochloride; this should read: metric 0·05 to ·1 gramme; imperial ¾ to 1½ grains.

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[1] Publ Hlth, January, 1941, p 61

[1] Annual Report of the Chief Inspector of Factories for the 1939 London H M Stationery Office, 1s, p 37

While it is gratifying that India is able to supply this ountry with vegetable drugs which were formerly btained mainly from countries which are temporarily losed to our trade, it seems curious that we should have o bring a commodity like valerian such a long distance verseas when all our domestic needs could be supplied n our own country if production, collection and distribuion were carefully organised. It may be that by next utumn when the rhizomes of the plant cultivated in Derbyshire, Oxfordshire, West Suffolk and elsewhere in England are ready to be dug up there will be less need to use cargo space for a drug which grows under our very noses. Incidentally belladonna and dandelion root are also being imported from India in order to make up for he loss of imports from central Europe; what has been aid about the home production of valerian applies almost equally to these.

THE STRETCHER PATIENT SECURED

A R P workers sometimes need to lower a patient on stretcher feet first by means of a rope fastened to the ead of the stretcher and a guide rope pulling the foot nd out from the wall, or to lower him by sliding the retcher down a ladder, or to lower him horizontally om an improvised crane, with the chance that the retcher will hit projections on the building and be tipped n one side or up at one end. Mr H F Hodges, staff fficer for stretcher parties, and Dr E B Grogono, nedical officer for civil defence, at Wanstead and Woodord, have devised a method of securing the patient to he stretcher by means of seven triangular bandages, and his is said to ensure that, whatever the position of the tretcher, the patient will not move more than 2 in. in ny direction and that he will even remain in contact ith the stretcher when face downwards.

The patient is blanketed (the Wanstead and Woodford nethod officially approved,[1] is preferable), placed on the tretcher, and the bandages are then applied as shown n figs 1 and 2. They are secured not by reef knots, which for this purpose are useless and dangerous, but by two round turns on the stretcher bar and two half hitches (fig 3); this has the advantage of taking nearly all the strain off the knot itself. It does not matter whether the knots are tied as a clove-hitch or in opposite directions. Whether the head or the foot of the stretcher is raised nearly all the patient's weight is taken by the ankle bandages. The knee bandage prevents flexion at the knee, which would allow the patient to sag downwards, and the hip bandage steadies the pelvis. The crossed chest bandages give support if the stretcher is turned on its side and also take a little weight if the head is downwards. They can be fairly firmly applied and scarcely restrict breathing. The head bandage immobilises the skull comfortably and does not normally take much weight; it is especially useful if the patient has a head injury. Alternative methods have been devised for special injuries. For example, with leg injuries, two bandage slings are placed under the arms from the top bar of the stretcher (fig 4); the pelvic bandage is used, but the weight-bearing ankle bandages are omitted or modified, and the legs are steadied on the stretcher by such means as the injuries allow. These methods have been approved by rescue personnel and are now being practised. With custom, the bandages can be applied very quickly.

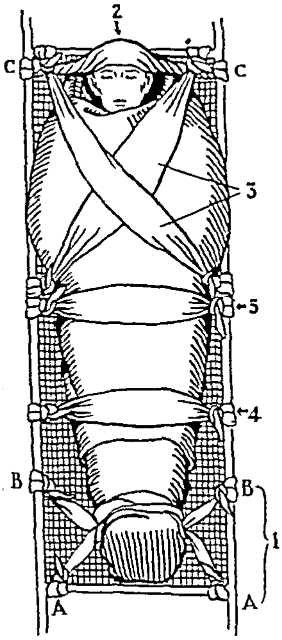

FIG 1—The seven triangular bandages applied. Numbers indicate order of moves

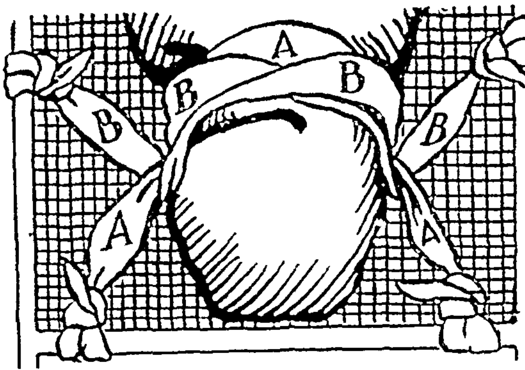

FIG 2—Detail of foot bandages

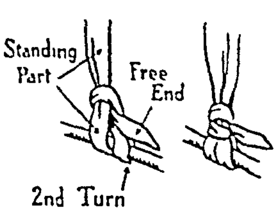

FIG 3—Knot

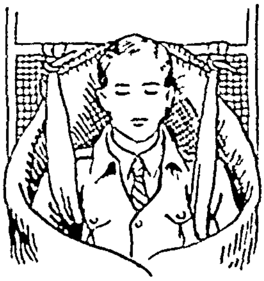

FIG 4—Arm slings

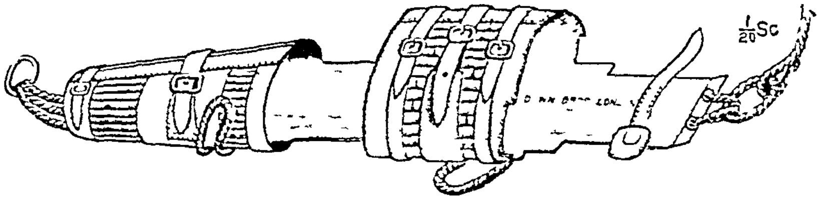

FIG 5—Neil Robertson stretcher, used for hoisting patients from the holds of ships

A ready-made stretcher intended to serve the same purposes, (the Neil Robertson hammock stretcher) is shown in fig 5. It has proved valuable in the Navy for removing wounded men from turrets or storeholds, or even from ship to ship. The bands which enfold the patient are made of canvas, reinforced with bamboos or laths, and fasten with adjustable straps; the stretcher is thus compact, light and flexible. The patient can be carried by the hand grips at the sides, or slung from ropes at the head and feet.

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[1] See *Brit med J* 1940 2, 638

INDEX TO THE LANCET

VOL II, 1940

The Index and title-page to Vol II, 1940, which was completed with the issue of Dec 28, is now ready. A copy will be sent gratis to subscribers on receipt of a post card addressed to the Manager of THE LANCET, 7, Adam Street, Adelphi, W C 2. Subscribers who have not already indicated their desire to receive indexes regularly as published should do so now.

Some have seen the Emergency Medical Service as the beginning of a state medical service I do not think that this is true Nevertheless it soon became clear that a new conception in medical service had come into being The idea of decentralising the treatment of the urban sick was not new It had been advocated for many years—whenever one of the large London hospitals was due for rebuilding The reasons against removal included the difficulty of getting patients to consent to go out, because their relatives might not be able to visit them, and possible difficulty in connexion with the consulting staffs These have not proved insurmountable, the patients in the sector hospitals are still visited by their friends, and the consulting staffs have found that travelling to and from the sector hospitals has not been so difficult to arrange as was anticipated It seems that the principle of keeping a small hospital in town with an adequate outpatient department and transferring the sick to a hospital in a green belt outside is feasible The Minister of Health, from the work of the Nuffield Trust, has already seen the possibilities opened up by the regional system In the country districts enlightened counties have taken advantage of the Hospital Act which permitted them to set up an adequate hospital service, others have not been so forward and these have had to depend on small voluntary and cottage hospitals with insufficient accommodation The regions include several counties and borough councils, so that a new method of control will have to be evolved, the county control disappearing But it would be unthinkable not to use the enormous experience of the county medical officers and their staffs in any such scheme

THE FUTURE

The fallacy of all policies connected with medical services is the position, in the social scheme, of the doctor We have trained the lay public and ourselves to regard our position in the economic structure as that of a consultant We are there to give advice, and if they don't like it—whether it takes the form of plans for an operating-theatre or a bottle of medicine—they are at liberty to throw it down the sink Some change in this outlook will have to come Medical men will have to be given some kind of executive authority, and the medical profession will have to be ready and willing to assume that authority, so that medical measures for the improved health of the nation are not left to county committees

Let us sketch an outline of what such a regional scheme might look like There would be small hospitals with full outpatient departments in the urban districts, and, outside these districts, in a green belt, large central hospitals providing accommodation and facilities for all specialties, and dealing only with acute sick in the same way as the existing voluntary hospitals do Further afield, depending on geographical circumstances, there would be satellite hospitals dealing with tuberculosis, mental cases and those cases known as the chronic sick, and in each region there would be convalescent homes for children and adults Let us see how the hospital patient of today would fit into such a scheme A case of gall-stones or cancer would seek advice at an outpatient department and be seen by the appropriate consultant who would advise hospital treatment The case would be admitted centrally and transferred to the large acute hospital to one of the consultant's beds in that hospital After investigation and appropriate treatment the patient would be sent for convalescence, or if the condition was inoperable to his own home or to the satellite hospital for the chronic sick With another, a patient with tuberculosis, the same procedure would be adopted, he would be sent for investigation and treatment to the larger hospital or direct to the satellite sanatorium The acute case would be dealt with at the urban hospital, but the patient would be transferred to the periphery as soon as he was fit to travel

At this point undoubtedly someone will say this is a state medical service, and at once sinister thoughts creep in about the curtailment of that liberty for which we are supposed to be fighting I would agree that this would be a state service—a proper state service—but it would be no more than what the emergency medical service is attempting to be today with a free medical profession Such a scheme has to be harnessed to finance, and it is here that the profession become nervous, believing that money means not so much control as interference This need not necessarily be so In the past the medical schools have been given large grants of money through their universities, but there has been no interference with the way individual schools have carried on their affairs That the money granted has been expended in a proper manner is all the control that has been asked These grants merely ensure that a broad general plan is followed In the regional scheme outlined some similar system of linking finance might well obtain It has already been suggested that the voluntary hospitals might have their resources pooled under a hospitals corporation, on similar lines to the B B C Such a suggestion might go further by pooling all money that today goes to the hospital services, under a national medical corporation, or some such body

In such a scheme surgery would play a large part and the surgeons of today should be asking themselves how they can improve the surgery of the future in any reconstruction that takes place What constitutes a surgeon? Is he a man who goes out into a country district and calls himself a surgeon, or is he a man who takes a higher qualification in surgery? Broadly speaking, neither The first may fail from lack of knowledge, the second from lack of judgment He should be a man who in the opinion of his teachers has enough knowledge and experience to undertake surgery, who has served an apprenticeship in surgery The carpenter and the cabinet-maker work in the same medium, yet the one requires a different apprenticeship from the other, and we expect a more finished class of work from the latter We must ask ourselves, then, if these surgeons of the future should not have more experience under recognised teachers, after their final surgical examination, and before going out into the country under such a scheme We are seeing almost daily men and women with wounds that seem as though they must cripple the patient for life, who yet recover almost full function As surgeons we have also to inflict wounds in patients We should see to it that we do not take advantage of this astonishing phenomenon of human recovery, but recognise it humbly as an aid to our art and that we teach our assistants to treat it in the same way, so that when they leave us they go out with judgment and gentleness as good surgeons For our part we must see that, whatever reconstruction takes place when peace comes, the individual character of British surgery—which is one of its greatest possessions—is maintained

FURTHER AMENDMENTS TO THE B P

FURTHER alterations and amendments to the British Pharmacopœia have been effected by notice in the London, Edinburgh, Belfast and Dublin *Gazettes* The items concerned are acetum, oxymel and tinctura scillæ, scilla, cataplasma kaolini, sodii lactas, tinctura valerianæ ammoniata, urginea, valeriana and valeriana indica Hitherto the squill of the Pharmacopœia has been restricted to the bulb of *Urginea scilla*, the main source of supply of which was Sicily, and as that source has been closed Indian squill, the bulb of *Urginea indica*, is the subject of a new monograph and the monograph on squill has been amplified by the addition of the words "when squill is prescribed or demanded Indian squill may be dispensed or supplied" Facilities have been given to the importation of Indian squill which is now quoted in the London drug market This variety of the drug is stated in the B P C to be used in India and the Eastern Colonies in place of squill, and by amending the monographs on vinegar, oxymel and tincture of squill so as to permit the use of Indian squill in their preparation the Pharmacopœia is brought into line with Indian practice The effect of the alteration in the monograph on kaolin poultice is to sanction the use of sodium lactate in place of glycerin in its manufacture, the object being to assist in the conservation of glycerin supplies The monograph on valerian has been amended by the addition of the words "when valerian is prescribed or demanded Indian valerian may be dispensed or supplied" As in the case of Indian squill, facilities have been given for the importation of Indian valerian, and in the preparation of ammoniated tincture of valerian Indian valerian (*Valeriana wallichii*), which is indigenous to the Himalaya, veral periods allotted to a regular sergeant to instruct in the use of service forms, but his barrack-square nce prevented me, and lastly, I listened first with onder and then with admiration that my favourite bject—psychological medicine—should be dealt with two periods described on the time-table as neurology d should yet be handled in a manner which left the pression of first-rate specialist knowledge combined ith a practical, human point of view that I had not sociated with service medicine There was a glamour o about living in an officers' mess housed in an ex-othschild palace with a chandelier of a hundred lights anging from the high roof of the hall Solid gilt overed the richly moulded ceiling of the writing-room ad food of magnificence and plenty undreamt of by ny houseman was served in a panelled but still gilded ining-hall

There were, of course, the difficulties and anxieties hich I find inseparable from life among a large number f complete strangers, and there was the bogy of saluting Whom to salute and when? And how, when confronted y a long column of men "eyes-lefting" you? All that eems funny now but at the time it seemed complicated nd important Few of the new officers there could refrain om comparing their feelings with those they had xperienced as new boys at school With age and xperience we learn to control and conceal even from urselves most of our childish reactions, but when, I onder, if ever, do we really abandon them? From his training centre I went by ballot to a large recruiting epot Recruits arrived there at the rate of 200–300 a ay They spent three days in the camp queueing, they ueued up at different places all over the camp for clothes nd forms and photographs and food and medical nspections and inoculations These last fell to my lot Every man on arrival at and departure from a station has to be "F F I-ed" by an M O, that is, he is certified 'free from infection" In large camps the procedure is ighly organised, at this one the men were formed up, tripped to the waist, in a long queue I sat on a chair wo paces from the head of it, a corporal gave the order 'Drop your slacks to your knees and put your hands upon your heads as you come up to the medical officer" An orderly stood where he could see each man's back while I ran my eyes alternately up and down their bodies—this sort of work teaches you economy of movement—noting with interest those of exceptional physique and wishing for the sake of tidiness to group them into their physical types But how much more difficult it will become to treat people as individuals when civilisation reaches that degree of specialisation which requires only the appropriate physical type to be employed on each job uniforms already render the recognition of individuals in a group less easy, but we do at least still have the tall and thin mixed up with the round and rosy

Being ignorant of skins I usually had to learn from the airman the name and treatment of any of the unusual skin diseases I saw, but there were, I noticed, an unfortunately large number of men with, or severely scarred by, acne Occasionally a man had to be kept till the end for more careful scrutiny of a possible scabies and I was disturbed by the thought that I might miss what until a few weeks ago I had never seen—a case of pediculosis

I have not yet been able to overcome the feeling that I owe an apology to these young airmen for lending to an examination of this sort the title "medical" The custom, I suppose, survives from the days when all common soldiers were presumed to be lousy until the contrary was proved, but, needless to say, among the self-respecting and intelligent young men recruited into the Air Force today any untreated skin disease is extremely rare If one of these examinations made on changing stations should reveal unreported skin disease, it would be, I think, indicative of lack of confidence by the airmen in the medical service of the station concerned rather than neglect on their part

The technique of mass inoculations was still more highly organised As the most recently joined M O of a team of three I began by vaccinating while another gave the T A B and the third the A T T The men again filed through, this time as each passed the first orderly checked his name off a list, a second orderly cleaned his arm, and a third passed a sterile needle for each man to the M O who gave the first injection The man, with the needle still hanging in his arm to save a double puncture, walked on to the second M O served by a fourth orderly who filled the syringes and returned the used needles to the steriliser A fifth orderly flamed my vaccination needles and passed them to me with the end dipping in a phial of vaccine lymph, and as each man stepped up I had only to make one scratch "not exceeding ¼ in" and drop my needle mounted on its cork into a basin The man passed on to a sixth orderly who applied a dressing to his arm After the first parade my fingers and wrist ached, but I was proud of the speed and efficiency with which we had performed our task I forget now the exact figure, but I think we had got through the whole parade at the rate of one man per 7 seconds whereas the "record" was only 5 seconds per man It was not long, however, before my interest in whole men rather than their arms asserted itself, at first it was only an outstanding arm, one of magnificent girth or colour (for this was a summer of fine tanning) or, occasionally, of match-stick proportions which compelled me to look and see what manner of man it belonged to, but with even a single glance I fell behind with my work and before long I revolted at the system These mechanised contacts between doctor and patient are bad for both, tending to weaken the bond of personal confidence which is needed if one is to see disease early and treat it effectively The whole business reminded me of a modern factory I was once shown over in Denmark where the sides of bacon passed on an endless chain before a team of white-coated inspectors each of whom nonchalantly applied to its rind his appropriate stamp

* * *

Correspondence on war neuroses had not prepared me for Mr H F Buxton's story of his blasted horse, Idol, who seems to have behaved like an old-fashioned shell-shocker After the bang, which just makes fourteen of his mates frightened and restless, Idol and another horse lie unconscious The other recovers in two hours, but Idol is dead to the world till a humane killer is brought along, when he suddenly shivers and gets up, returning with some difficulty to light duty at the end of a week Three months later comes another bombing, more severe this time, and Idol relapses in typical fashion, now he cannot back as a well-disciplined dray-horse ought, and finds difficulty in turning—interferences with voluntary movement which, in the human hysteric, would demand a search for purposive or symbolic elements in the depths of the unconscious, or, according to another school, would be dealt with by firmer methods But Idol cannot free associate for the psycho-analyst, nor does he present pants that can be kicked, so more time-honoured, if temporising, methods are used and he is promised a nice holiday in the country as soon as the fine weather comes Have human communications so corrupted his good manners that Idol seeks the secondary gain from illness and perpetuates symptoms that should be evanescent or after all were the older pathologies true that rested on separated synapses and punctiform hæmorrhages as causes of apparently hysterical symptoms? How, too, should the humble clinician classify Mr Buxton's blasted cows, whose dreamy placidity and anorexia doomed them to slaughter? It is all very confusing

* * *

All morning I was behind schedule Various foreigners (by which we mean all those unfortunates who have not lived in this neighbourhood for at least 10 years) strolled late into the surgery for long consultations explaining cheerfully that they thought surgery hour was from 9 30 to 10 30 instead of from 9 to 10 The result was that I started late on my long morning round knowing that I had to be back at all costs for a series of appointments starting punctually at 2 30 P M On these occasions I refuse to look at my watch, for if I do I get fussed, but I am not above taking a sidelong glance at the clocks in patients' houses, always fondly hoping that they may be fast Still with several visits to do and wondering just how late I was I reached a house about 6 miles from home There was no clock on view as I proceeded upstairs to my patient's bedroom Downstairs, six "pips" sounded The one o'clock time signal No lunch today,

In England Now

A Running Commentary by Peripatetic Correspondents

I'VE just read General Wavell's articles in the *Times* on the art of generalship It struck me that the application of the principles which he enunciated was far wider than he claimed, in fact that they held good for leadership in all walks of life To make it clearer in my own mind I sat down with pencil and paper and wrote out his "qualities necessary for a general," arranged roughly in order of importance The result was like this —

1 *Toughness*—Robustness, even solidity, ability to stand up to shocks, mental toughness more important than physical

2 *Courage*—Determination, energy, the fighting spirit, the will to win, the spirit of adventure "a touch of the gambler"

3 *Common sense*—An ability to see what is and what is not practical or possible

4 *Administrative ability*—An ability to devolve responsibility, and to suit instructions to the capacity of one's subordinate

5 *Natural qualities of leadership*—Interest in, and knowledge of, humanity, the capacity to inspire the confidence respect and appreciation of one's men, rather than their affection, firmness combined with justice, a position which is remote but not aloof, appreciation of humour, but little demonstration of it

6 *Clarity of purpose*

7 *Imagination*—Adaptability, craftiness

8 *Observation*

With this as a basis, I constructed what ought to be called "the Wavell Psycho-biogram" You take any person you like and mark him or her from 0 to 3 under each of these headings 0 means complete "absence of the quality", 1 means "quality present but not up to general standard", 2 means "present up to general standard", and 3 means "maximal amount present" (Cæsar or Napoleon class) Maximal marks are 24, pass marks for a general or other leader position are 16, below that, "ploughed" Before I marked my subjects, I classified them as leaders or non-leaders, so as to test out whether theory and practice went hand in hand Here is my table —

Subject No	I	II	III	IV	V	VI	VII	VIII
Leader	Yes	Yes	Yes	No	No	Yes	No	Yes
Quality								
1	2	1	2	1	2	3	2	2
2	2	2	2	3	2	2	1	2
3	3	2	2	1	2	2	2	2
4	2	3	3	1	2	2	1	2
5	2	3	2	1	1	3	1	3
6	2	2	3	2	1	1	1	3
7	2	2	2	2	1	2	2	1
8	2	2	2	2	3	3	2	2
Total	17	17	18	13	14	18	12	17

So it seems to work all right All my subjects were outstanding people in their own line I was a physiologist, II a schoolmaster, III a doctor, IV a social scientist, V an artist, VI an administrator, VII an engineer, and VIII a matron, IV, VI, and VIII were women One day Wavell psycho-biograms may form an integral part of the work of army selection boards Until we reach that enlightened age, however, I can strongly recommend them as a fire-side game for whiling away the blackout

* * *

When I was a boy some aunt or other well-meaning person gave my brother for Xmas a little book called "Parables from Nature" I don't think any of us ever read it, it was considered the very essence of slop, and it became a family joke to secrete it among one of the others' luggage, especially when going back to school Later when any of us went abroad it invariably found its way into his or her belongings, and I have been rendered suddenly, poignantly and hilariously homesick in mid-Pacific and in the Indian Ocean by coming across that little cream-coloured volume of Mrs Gatty's, skilfully hidden in my whites "Parables from Nature" must be one of the most travelled volumes in existence Yet, when some weeks ago, Jan 12 to be exact, I found glowing under a cowl of snow the radiant blossom of a winter aconite, and another one coming up, breech presentation, beside it, I felt impelled to write a parable from nature myself For how does this little gem manage to extract nourishment and energy out of the frozen ground? The answer is, of course, it doesn't, it did all that last spring and summer, and stored it up in its nobbly corm Thus and no otherwise should all those on whom the warring nation counts store up for themselves energy and health during the coming spring, summer and autumn Cabinet ministers should don the shortest of shorts and run and bask on the Terrace, the majority of the Services will get plenty of sun and exercise in following their avocations, but munition workers, especially those youngsters who are just going into industry, should, if in any way possible, have their summer camp, or at any rate a series of week-end camps Last year my own camp which normally takes about 600 boys each season did not have one, 600 fortnights of health storing lost, and that was going on all over the country It will be unscientific folly of the worst kind if hiking and biking and camping are given up They should be encouraged, even to the edge of compulsion For consider the aconite, and remember that next winter may be the testing time of staying power

Some weeks ago the upheaval of war brought a contemporary student at my old hospital and me together for a fortnight of close contact During the 5 years we had been fellow students, as far as we could remember, we had never spoken to each other, in my mind was a dim memory of a slim figure with books under his arm, knowledgeable beyond the dreams of decency, who because he did not play games hardly intruded within my myopic range, his memory was of a rather noisy individual, definitely of the unintelligentsia Of the 25 years since then he has been a psycho-analyst for 12, and for 4 years before that he was analysed himself, while for most of that time I have been scudding about the earth's surface more or less on my lawful occasion. We swopped yarns I told him of my mild adventures in the Pacific, of that sorceress of cities, Istanbul, of treks in Australia, of China seas, only touching up the truth when it seemed irrelevant or disappointing He beat me every time, he'd been much further afield He told of a strange land where someone called Id held sway, where people went about seeking incestuous connexion with their parents or alternatively longing to murder them, of a strange sect that fell down and worshipped an old god, Fundament, of another country insecurely held by a supercilious dictator called Super ego, of complex plots and stratagems, conducted in a weird and cabbalistic language, of horrid doings when this ruler slept, of taboos and castrations In the last fortnight we have made up a good deal for our 5 years silence, especially at meals, but I think the consumption of salt on both sides has been abnormal

* * *

Motives for joining the services, I have learnt, vary from unalloyed patriotism to frank self interest Orphaned by the last war and Irish by birth I abound in neither military virtues nor in patriotic sentiment for an English government, but the break through in France with Dunkirk and the first threat of invasion provided a sufficient stimulus for me to enter my name when I reached the end of a house-physician's appointment in London, and within a few weeks I was commissioned in the R A F V R July found me attending the ten days' course which converts civilian practitioners into service medical officers During this time I listened with amusement to the squadron-leader detailed to instruct us in "service customs" and marvelled at the punctilio with which, judging from their supplementary questions, some of my companions proposed to conform, I listened at first with boredom but later with infectious enthusiasm to the officer who instructed us in the ways of making latrines so that no fly could get in, or, if it did, neither it nor its burrowing progeny could possibly find a way out, I listened with satisfaction to a discourse which reduced the prevention and treatment of venereal disease to the simplest proportions, I tried to sleep through

Letters to the Editor

REATMENT OF HYPERTOXIC DIPHTHERIA

IR,—I read with much interest the papers by eara and McSweeney and your leading article of 15 The belief of the Dublin workers that the htheria bacillus in the body produces two factors nd B, and that the ordinary commercial serum, while ctive against A, is relatively unsuccessful against B, ourages me to give my experience in the treatment of ertoxic cases of diphtheria with commercial serum s a blood-transfusion from a suitable adult donor treatment is based on the theory that the average lt is immune to the type of diphtheria prevalent in district The adult's blood contains antibodies ich are specific for the *disease* and not just for one tor of it Certain antibodies are present which are available in very small quantities in commercial itoxin A combination of commercial antitoxin plus antibodies present in a suitable local adult's blood uld contain all the antibodies required for treatment a local patient A transfusion from such an adult uld also benefit the patient by adding healthy blood his own and diluting the circulating toxin The very ere cases are given 60 000 units of commercial antin intramuscularly and a similar quantity intraously The blood for the transfusion is preferably en from the pooled blood of many donors rather than This blood can be got by arrangement from a local od bank It is advisable to dissect down on the vein l tie in a cannula The blood is not heated and is en by the drip method The average quantity ected is a pint, but this depends on age and so on e results are very satisfactory and an improvement is ted very quickly in the patient The cases so far ated have shown none of the complications usually ociated with the hypertoxic type of diphtheria I gest that, since the serum mentioned in O'Meara's d McSweeney's articles is not yet available commercily, ordinary commercial antitoxin and a transfusion of ole blood be used instead

ublic Health Dept, Gorseinon Swansea **G E DONOVAN**

POST-WAR HOSPITAL POLICY

SIR,—Mr Somerville Hastings writes with much voted experience and sincerity, but attention should drawn to the concluding paragraph of his letter where says "It is the people of this country who use hospitals It is the people who must control them, ough their national and local representatives" Does mean local authorities, elected often on a 30 per cent ll for many qualities and policies, mostly far removed m hospital experience? Or does he mean Parliament, cted on a party vote which has little or nothing to with hospitals? My own experience, as a county O H for 16 years and as M P for 21, urges me to omit that such a suggestion means hospital management a bureaucracy, however able and honest, but little resentative of the people, and that what the people nt is hospitals and staff that have their confidence, ially as a result of long tradition and self-sacrificing rk of those who run them and support them

This is the hospital problem before us, not to be met any cut-and-dried system of mere municipalism or luntaryism, but by a wise combination of the best alities of both systems

Hatfield **FRANCIS FREMANTLE**

TREATMENT OF WAR NEUROSIS

SIR,—It seems to me that the revival of the old conversy left over from the last war between the "getm-fit-quick" and the "slow-but-sure" schools, may left to settle itself in practice, since it all depends on type of personality, the type of neurotic reaction, l the time at which the case receives efficient treatnt, not to mention the kind of therapist

Dr Slater and his colleagues stressed the importance facing the problem of "boarding category" as soon possible, and of re-adapting the neurotic soldier for entry into a useful civilian life My experience has en mainly with soldiers discharged from army life neurosis, after having had or more often not had, suitable treatment They are certainly not re-adapted, and have managed to come in the way of further psychological treatment more by luck than good management Surely, here is a question that should be tackled at once, before we have an army of civilian neurotics clamouring for pensions Is there any reason (except the spurious one of saving money) why these men should not be kept on at E M S hospitals, as civilians, until as much as is possible has been done for them, instead of being hustled out into a difficult world soon after being boarded?

There is a golden opportunity not only now but after the war, to procure for cases of neurosis suitable residential treatment, which has never before been possible It will only be by lack of vision that this will be lost, and we shall once more be left with recrimination and muddle

Birmingham **CHARLES BURNS**

CHEMOTHERAPY OF CEREBROSPINAL FEVER

SIR—Dr P H Willcox and Dr G Cutts criticise (*Lancet*, Feb 8, p 191) my dosage of 9 g daily of the sulphonamide drugs in cerebrospinal fever during the initial period of 2–3 days They have apparently had complete success with 6 g daily of sulphapyridine in the few cases which they have treated This I can believe, but suggest that a larger experience of this dosage will occasionally lead to disappointment They state that I "consider that two days' treatment with sulphapyridine should be enough to eradicate the disease" They will find no such assertion in my paper, explicit or implied Perhaps they refer to my statement that meningococci were never found in the cerebrospinal fluid after 2½ days of sulphathiazole in standard dosage (9 g daily for an adult) From my earlier papers they will see that in 1938–39 29 out of 30 bacteriologically verified cases treated with this dosage of sulphanilamide had the cerebrospinal fluid free from organisms within 48 hours, and the same was true of 33 out of 34 cases treated with sulphapyridine In the epidemic period of 1940, out of 120 cases (80% bacteriologically verified) apparent sterilisation of the fluid was delayed beyond 48 hours in only 1% But no-one should infer that the disease has at that stage been eradicated, or limit the duration of chemotherapy in this disease to two days It is obvious that the more rapidly the C S F is sterilised the less will be the liability to relapses and sequelæ, and the more certain the cure I have seen several cases in which the lower dosage did not render the C S F free from organisms so rapidly, and indeed, with sulphanilamide, led to apparent drug fastness of the organism In infants I have seen and been informed of a considerable number of avoidable deaths where a low initial dosage of sulphapyridine (1 g daily) was used Why take the risk with the lower dosage when the higher has been proved to be not only effective but safe?

In view of the low case-fatality which I recorded in my series, Dr J M Kennedy (*Lancet*, Feb 15, p 231) asks for an explanation of the Registrar-General's weekly returns for London which, in 1940, showed 868 notifications and 158 deaths (fatality 18%) In contrast with this I had 234 verified cases treated during 1940 with 14 verified deaths (fatality 6%) If my cases are excluded from the London figures, the apparent fatality for the rest of London would appear to be considerably higher than 18% I raised the same point in connexion with the statistics for the first quarter at a meeting of the Royal Society of Medicine in May, 1940 I was informed that these notifications and deaths did not necessarily refer to the same people, since, for example, cases might be treated in London hospitals which were notified elsewhere, and further that the figures were subject to correction in respect of altered diagnosis It would probably be fallacious to consider the Registrar-General's weekly returns in the London district as anything more than a rough guide to the true fatality-rate of cerebrospinal fever In this connexion I was puzzled by Dr Kennedy's statement that the weekly returns showed 235 notifications for Sheffield (with 46 deaths) and that he treated 235 Sheffield cases in his hospital Does this mean that in no case was the diagnosis altered after admission to hospital? In 1940, 17% of cases certified as cerebrospinal fever on admission to this hospital had the diagnosis corrected, and a much smaller proportion admitted as pneumonia, enteritis, &c were found to be

I thought, and groaned inwardly Outwardly dissembling, however, as best I might, I listened to my patient's troubles and began to examine him Downstairs another six "pips" went off H'm, rather surprising You don't usually get two time-signals at a few minutes' interval like that Odd What was odder was that neither time-signal had been followed by the low, muttering delirium of the announcer reading the news I finished my consultation, took leave of my patient and turned to go downstairs Curiouser and curiouser—another time-signal Could the BBC have gone off its respectable rocker or the Narzees be monkeying about with our sacred G M T ? I could make nothing of it Stepping into the drawing-room to discuss the patient's case with his wife I noted to my relief that it was only 12.15 by the clock which, I was assured, was right Incidentally the mystery of the time-signals was solved People ought not to keep parrots in places where they can hear the wireless

MEDICINE AND THE LAW

Unjustifiable Deduction by Insurance Committee

THE success of Dr H Tudor Edmunds of Slough in suing the Bucks Insurance Committee raises a point of general interest to the profession He had formerly treated a patient who is the manager of a firm trading as Scott and Bowne The firm had been "evacuated" to a place about 3½ miles from the doctor's own home and outside the district in which he usually practised A year ago the manager, aware of his skill, asked him by telephone to come and see two women employees of the firm who were ill He attended them and, two days later, also attended another woman employed there Dr Tudor Edmunds entered the attendances in his day-book as one item debited to Messrs Scott and Bowne Nothing was said at the time about their being insured persons *He made the visits at the request of the manager* He sent in his account to the firm for £4 0s 6d , when asked to give particulars of the amount charged in respect of each of the three patients, inasmuch as two of them were insured persons, he did so The case of the two insured patients was afterwards taken up by the firm with the insurance committee Dr Edmunds is himself on the list of insurance practitioners for the county of Bucks and has some 900 panel patients The insurance committee, without hearing his side of the matter, deducted £3 13s (in respect of his charges for the two insured patients) from the money otherwise admittedly due to him Having in effect been fined £3 13s, he claimed this sum in the Windsor County Court on Feb 4

His Honour Judge Cotes-Preedy had no doubt that the manager of Messrs Scott and Bowne had asked Dr Tudor Edmunds to go and exercise his medical skill , he exercised it, and nothing was said about any patient being on the panel until some weeks later The contract was not between the doctor and the insurance committee but between the doctor and the patients' firm The insured persons did not pay the fee , the insured persons, therefore, could not recover the money or ask the insurance committee to refund it The deduction could not be made under the regulations The court gave judgment for the plaintiff with costs on the highest scale, the case being considered as one of importance to the medical profession and to insurance bodies

Dr Edmunds, whose claim was undertaken by the Medical Defence Union, has vindicated a point of principle He visited the firm's employees as a private doctor, not as a panel doctor Had he known that they were panel patients, he would doubtless have given them the name of another practitioner in that district Doctors are often called in by firms to deal with employees in similar circumstances because it is found more convenient to have the services of one practitioner than a dozen The Bucks insurance committee contended at one point that, as it was a semi-judicial body, the judge had no jurisdiction in the case, the matter being covered by the medical benefit regulations His Honour drily observed that, if the defendant committee set itself up to be a judicial body, its conduct was singularly unjudicial *Audi alteram partem*, indeed, is a fundamental rule of natural justice Recent examinations of the functions of administrative tribunals have repeatedly emphasised that a man must not be condemned unheard This is an ancient principle As a judge quaintly remarked in a bygone century, God did not even expel Adam from Eden without first calling upon him for an explanation

Appeal of Pharmacist against Erasure

The first appeal from a decision of the statutory committee of the Pharmaceutical Society in accordance with the provision of the Pharmacy and Poisons Act, 1933, was heard on Feb 13 and 14 by a King's Bench divisional court consisting of the Lord Chief Justice (Viscount Caldecote), and Mr Justice Humphreys The appeal was brought by Mr Barry Lawson, whose name the statutory committee had directed should be removed from the register of pharmacists (THE LANCET, May 11, 1940, p 907) on the grounds that he had been guilty of misconduct in distributing to the public by post and without invitation or request a printed pamphlet of an objectionable or indecent nature The pamphlet advertised drugs which were described as "Hormonal treatment for impotence and nervous debility in men and frigidity and apathy in women" The court decided to dismiss the appeal, the Lord Chief Justice observing that there were some parts of the pamphlet that appeared to go so far beyond a mere medical or scientific advertisement that it was not surprising that somebody thought it should be made the subject of a complaint to the Pharmaceutical Society Mr Justice Humphreys observed that the pamphlet "has not the remotest claim to be considered a medical advertisement It is a mere catch-penny document designed to induce unwary persons to pay most preposterous prices for the drugs which are there advertised" The decision of the High Court is interesting in that the action of the statutory committee which it upheld was the first occasion on which disciplinary action had been taken against a pharmacist contravening the provisions in the "Statement upon matters of professional conduct" which was issued by the council of the Pharmaceutical Society in April, 1939 The statement was issued for the guidance of pharmacists and corporate bodies carrying on business under the Pharmacy Acts and one of its recommendations was that advertisements of medicines should not be issued to the public referring to sexual weakness The Pharmacy and Poisons Act, 1933, provides that the names of persons whose appeal to the High Court has been dismissed may not be restored to the register by the statutory committee except with the approval of the Privy Council

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SUPPLEMENT TO THE U S DISPENSATORY

FOR the first time in its 107 years' history the United States Dispensatory possesses a supplement, and a very useful one it is The supplement to the 22nd edition (London J B Lippincott Company Pp 76 5s) supplies notes on all the new drugs and preparations included in the two supplements to the U S P XI and the First Addendum to the British Pharmacopœia, 193 There are monographs on ascorbic, mandelic and nicotinic acids , adrenergic drugs, including epinine, amphetamine (benzedrine) and veritol , azochloramide, heparin, magnesium trisilicate, mecholyl, stilbœstrol soluble pentobarbital, pentothal and vitamins E, K, and P Riboflavin (B_2) and adermin (B_6) are discussed in addition to thiamine hydrochloride (B_1), but aneurine hydrochloride, the name used in the Third Add to the B P 1932, is unfortunately omitted from the list of synonyms for vitamin B_1 Sulphanilamide and its congeners, sulphapyridine and sulphathiazole, receive attention, and the supplement says that sulphapyridine "is generally regarded as inferior to sulphanilamide in streptococcus and meningococcus infections, but it is the universal consensus among those who have employed it that it is superior in the treatment of pneumonia How many practitioners in this country realise this in how many cases could sulphanilamide be prescribed instead of the more costly sulphapyridine? Too think that sulphapyridine is more effective than s anilamide in the treatment of *all* infections uitful field for investigation Fortunately we m fail to restore adequate elasticity without having sort to operation, though often enough it means hard and always involves the cooperation of the patient

JAMES MENNELL

gent's Park, N W 1

POLYRADICULITIS

R,—I was much interested in Dr H S Barber's unt (*Lancet*, Nov 2, 1940, p 548) of seven cases of e polyradiculoneuritis seen by him in East Anglia ng the winter 1939–40 Similar cases had been rved by me in Sunderland at about the same period are still occurring, all have been sent in either as theria or as throats requiring hospital treatment symptoms observed by me fit in with the typical rome discussed by Dr Barber and I have no doubt such cases were widespread For the last two s or so there have been many cases admitted to ital as diphtheria which were not diphtheria and had made me wonder whether diphtheria is as alent as the notifications suggest Many of my cases of tonsillitis, of mixed infection, and of course they not be avoided by immunisation against diphtheria rected figures from the larger hospitals might be aling The increase of throat affections is to my d due in great part to the blackout and congregation helters

EUSTACE THORP

ospital for Infectious Diseases, Sunderland

PREVENTION OF DIABETES

IR,—For several weeks a discussion on this subject been going on in your columns and I can no longer ain from a few candid remarks After all, carbo- drate metabolism is such a complicated subject that agreements are inevitable and a desirable sign of lth and progress in ideas The main point under cussion is whether high carbohydrate diets place a ain on the pancreas (Best et al and Young) or prevent betes (Himsworth) Experimental work shows that partially pancreatectomised animals (Allen) and in uitary-diabetic animals (Young, Best and others) rbohydrate food "strains the islets" and produces betes, and I am certain that continuous hypergly- mia usually makes human diabetes worse Himsworth lieves that high carbohydrate diet in normal animals and en not only does not strain the pancreas but prevents e onset of diabetes, but normals have such an insulin serve that hyperglycæmia is never produced and I do t see how their reactions are directly pertinent to an gument on diabetes As far as I know a fundamental periment has not been carried out I should like to see rmal dogs transfused for 1–2 weeks with sufficient ucose to maintain a constant hyperglycæmia Whether us per se does or does not reduce pancreatic insulin d produce β-cell changes is an experiment which ould clarify the problem under discussion

Professor Himsworth admits in his letter of Feb 1 that in diabetic animals whose disease is not con- olled by insulin excessive amounts of carbohydrate robably exhaust the remaining insulin-producing ssue" (the word "excessive," to mean anything ngible, requires definition) Now I personally have rely been able with insulin to "control" human abetes in the full sense of making the metabolism and lood-sugar normal, and so think that most of my cases nd probably his) can be made worse by excess of rbohydrate For this and other reasons I have seldom sed really high carbohydrate diets, except in total abetics who cannot be made worse I feel that Professor imsworth's advocacy of high carbohydrate diets which I think has had a most beneficial effect on the eatment of absolute diabetics in this country) is no nger on such clear theoretical grounds as before and quires clarification, so too does his position on insulin kinase" from the liver This is still mentioned, nd discussed, and, if he no longer believes in it, a efinite statement would be welcome

Professor Best and his colleagues (*New Engl J Med* 940, 225, 611) make the tentative suggestion that hildren suspected as likely to develop diabetes from their eredity, and presumably also from showing slight yperglycæmia, should be subjected to preventive treat- ent consisting of low C diets and small prophylactic doses of insulin Professor Himsworth objects to this as likely (low C diets) to produce diabetes but I protest on other grounds In the first place I think the hereditary theory they quote (Pincus and White, *Amer J med Sci* 1933, 186, 1) quite unproven In the second place the life of the children under such experimental observation would be really appalling—a distressingly abnormal diet and the certainty of hypoglycæmia from the smallest doses of insulin The hypothetical prevention (and there is no possible control in such an experiment) would be worse than having diabetes itself, where, in children, a reasonably normal diet is always prescribed as a necessity I hardly feel the suggestion can be taken seriously and do not think "the goal justifies the endeavour" Dogs, yes children, no

R D LAWRENCE

Diabetic Clinic, King's College Hospital

Parliament

Making the best of our Rations

FROM the medical point of view the House of Lords has been the chief centre of interest during the past week Viscount BLEDISLOE, an authority on agriculture, asked the Government if they were satisfied that during the current year there would be enough essential foods to provide for our civilian population, our fighting forces, and our (indispensable) farm animals, and whether there were any particular foodstuffs increased production of which in this country was both desirable and practicable The country, said Lord Bledisloe, ought to be told what foods were essential for health and nutrition, and to what extent enemy action would prevent supplies of them coming from overseas —Lord DAWSON of PENN reminded their lordships that this was the first totalitarian war, and as civilians were contributing a larger measure to the fighting than on previous occasions a nearer equation was necessary between food granted to the forces and to those in civil life In the light of the evidence which he regarded as overwhelming, that surplus food in the Army was being wasted he pleaded for a review of army rations Viewing the matter broadly, however, he thought that the nation had suffered precious little dislocation of its life under the system of rationing Up till now there was nothing to show that malnutrition had resulted, on the contrary the young, who mattered most, were in good health and colour and just as alive with energy and laughter as in times of peace On the other hand, certain sections of the adult population had suffered a reduction of weight While Lord Dawson felt that this was not a matter of immediate moment, he emphasised the need for keeping a constant watch on national nutrition from every angle, particularly since we had to set the course to prepare for another winter Notwithstanding the strong habit of meat-eating which has been inherited by the British people Lord Dawson asserted that the nation would suffer no harm from the curtailment of its meat supplies so long as it had access to certain essential foods Meat, it was true, was a valuable article of food, because it was a source of first-class protein and because it was appetising, stimulating and satisfying But the general public were gradually realising that they could keep healthy while eating much less meat than formerly Evidence of this was the fact that in the last 25 years we had come to buy 50% more milk, 64% more vegetables and 88% more fruit Lord Dawson went so far as to say that the present rationing would benefit the habits of our people after the war was over Among the essential foods to which the population should have access were wholemeal bread, milk, cheese, potatoes carrots, leaf vegetables and fruit The basic nutritional value was impossible without an adequate supply of vitamins It was known from the records in this country of rickets, beriberi and scurvy that the risk of these diseases had been removed by small quantities of vitamins That was one of the reasons why milk must be given pride of place It was the complete food, for it contained not only fats, protein and carbohydrate in assimilable quantities but also vitamins and equally essential minerals like iron, calcium and phosphorus Experiments in England with the Oslo breakfast had suffering from cerebrospinal fever In contrast with the *discrepancy* between the fatality in my hospital cases and the apparent fatality shown in weekly returns for London, Dr Kennedy shows a *similarity* between the fatality in his hospital cases (22% in 314 cases) and the apparent fatality in the weekly returns for Sheffield (19 6% in 235 cases) He suggests that, as some of my cases were first seen at, or admitted to, L C C general hospitals they form a selected group not containing the fulminating type of case, and asks how many of my *cases were sent on from general hospitals* The answer is 144 or 61%, more than two-thirds of these were transferred from the receiving room of the general hospital without being admitted to the wards, and nearly all the remainder were transferred on the morning after admission Fulminating cases were found to be readily transferable I have classified as severe, or very severe, 89 or 38% of the whole series Dr Kennedy mentions that 35 of his 70 deaths occurred within 24 hours of admission, but, similarly, in my series 6 of the 14 deaths occurred within 24 hours of admission, and 7 were from general hospitals and 7 from home Dr Kennedy also asks the number of deaths which took place at the other London hospitals before patients could be transferred This information is unobtainable at short notice but I have ascertained that the distribution of 157 registered deaths in London during 1940 were L C C fever hospitals, 64, L C C general hospitals, 50, other hospitals, 38, private addresses 5 I do not yet know the distribution of the 50 deaths among the L C C general hospitals, nor what proportion of them represent fulminating cases, nor the total number of cases admitted to the general hospitals It is possible, however, that some of them might have raised the mortality in my series had they been admitted direct to Park Hospital

As far as I can judge, there are other factors concerned in my low fatality-rates One is the verification of all deaths post mortem by a pathologist No less than 16 deaths in cases admitted as cerebrospinal fever were due to tuberculous or Pfeiffer meningitis, cerebral abscess, tumour, hæmorrhage or ulcerative endocarditis Diagnosis altered in the P M room does not always appear in the death certificate In this way, probably 16 deaths instead of the true figure of 14 appeared in the Registrar-General's returns in respect of my series

Apart from the question of dosage, the following factors are, in my opinion, important in treatment and should be applied immediately on admission, since delay may be fatal intravenous sulphapyridine or sulphathiazole in every severe acute case, tube-feeding in comatose cases night and day in the first 48 hours if necessary, parenteral fluid if there is much vomiting or dehydration, the general use of sulphathiazole in preference to sulphapyridine because it rarely causes vomiting and dehydration, and may, besides, be a more potent drug All this means that experienced medical and nursing assistance must be available for every case admitted even at such awkward times as the middle of the night, Saturday afternoons, Sundays and bank holidays That is why, in my opinion, the treatment of cerebrospinal fever in an organised unit for each district is likely to yield the best results

Park Hospital H STANLEY BANKS

SIR,—I was glad to see the letter of Dr Willcox and Dr Cutts in your issue of Feb 8 dealing with Dr Banks's remarks on the dosage of sulphapyridine in cerebrospinal fever Indeed, before I read it I had a letter prepared for you pointing out the false deduction as to the cause of the relapse in Dr Banks's case 1 May it not be that the improvement in his cases after transfer to the Park Hospital was due to factors other than increased dosage? We have had similar experiences with the lower dosage Adequate fluid intake, for example, is one of the most important factors in successful treatment and this is probably achieved most successfully in a good infectious-diseases hospital The numbers in Hastings have been small, but have included some very severe cases, and, although we have noted the unsatisfactory results of low dosage, we have had reason to be satisfied with the "pneumonia dosage" of sulphapyridine, supplemented in a few cases by 1 g of the sodium salt intramuscularly on the first day Since the introduction of sulphapyridine, 22 cases have been treated with no fatality or permanent complication except a doubtful cardiac lesion in an airman who however, was later passed for full flying duties We are therefore disinclined to increase our dosage without good reason and would welcome further discussion of the subject Dr Kennedy's letter of Feb 15, quoting a mortality of 22% in 235 Sheffield cases, treated by dosage even higher than that recommended by Dr *Banks, gives further ground for reviewing this* subject In connexion with Dr Kennedy's final point, I would add that the 22 cases referred to in this letter include all the cases (18) notified within the borough, 4 cases were admitted from surrounding areas

Health Department, Hastings K J GRANT

HIGH BLOOD-PRESSURE

SIR,—I have just read three articles on high blood pressure which doubtless summarise the latest knowledge we possess In 1912—quite frankly, to my surprise—I was fortunate enough to be awarded the medal of the Hunterian Society for my essay on this subject After having read these articles I looked up the original essay I had forgotten much of what it contained To my surprise I found that the articles contained practically nothing more than I had written 30 years ago Regarding ætiology, management of a case, apparatus and treatment I found nothing new except mention of the xanthine derivatives In a limited—a very limited—sphere these preparations have been "useful", I think this is also all one can say of them A few other drugs and forms of treatment, not known in 1912, are mentioned in the articles and are almost all turned down as having given "disappointing results," which is perfectly true It is to me, a sad reflection that a subject so important as this should have been at a standstill for so many years, this in spite of the enormous amount of literature surrounding it

Upper Harley Street, N W 1 A GRAHAM STEWART

SUPPORT FROM THE U S A

SIR,—The subjoined extract is taken from a letter written by a surgeon in the U S A on Jan 7, when the Lease-and-Lend Bill was in its infancy It indicates how widespread at that time was the desire to help Britain to the utmost

> "You—I mean England—are having enough trouble We are going to do everything to see that England doesn't fall To you it may seem slow A few months more will make a difference that even you will not believe You read of opposition but it is a small minority—but vociferous

London, W 1 ARNOLD LAWSON

CRAMP AND THE ILIO-TIBIAL BAND

SIR,—After reading your annotation of Dec 28 (p 816 I thought the following record might be of interest

A middle aged lady, who had been severely injured in motor accident, was advised to seek my advice for very so called sciatica Examination showed that the ilio band was so sore and inflamed that, with her doctor's con I told the patient that I thought the only thing to do was divide it, following Ober's technique The patient inquired what it would involve, and I replied a week in bed and then gradually getting up during the next week, that is a f in the home all told We were somewhat disconcerted the patient said that she considered the proposal quite possible, because, far from being able to stay in bed for a *she had never been able to do so for as much as two h* for the last eighteen months on account of cramp Still had nothing else to suggest and reluctantly the patient consented From the moment the band was divided the cramp entirely disappeared, and I am thankful to say it has recurred since The operation was performed over years ago

Of course, nothing can be claimed from a single and it is not the general practice to refer patients cramp as the main symptom to the physical department Knowing, however, the technique examining the elasticity of the band, and knowing the widespread *symptoms that can be attributed* to the loss of elasticity in it, it seems that this might

nd for trained medical personnel —Mr Brown replied
informed that 18 alien doctors, all of whom are citizens
J S.A, have so far been registered under an order of
ber, 1940, which applies only to such citizens and to
ns I am not aware that any of this group of doctors
the fighting services Under a more comprehensive
f January, 1941, the cases of some hundreds of alien
, who are of allied nationality or refugees from enemy
es, are being investigated as speedily as possible, but
ve yet been registered

R W Sorensen Why are Spanish refugee doctors
en the same opportunity as other refugee doctors in
ermitted temporarily to practise in this country, and
e Minister take steps to remedy this —Mr Brown
ject of the order is to facilitate the enrolment of
e foreign doctors in such services as the armed forces
r own countries present in the United Kingdom and the
l service of this country So far as I am aware these
s would not benefit to any appreciable extent by
n to the list of territories specified in the order

Exchange of Medical Officers

T E Groves asked the Minister whether a scheme had
repared for the exchange of medical officers of hospitals
bed areas with those in less active areas, and, if so,
was the procedure —Mr Brown replied No arrange
for such exchanges have yet been found necessary, but
atter is being kept under review

edical Grading of Emergency Reserve Officers

Reginald Blair asked the Secretary of State for War
mbers of the Army Officers Emergency Reserve rejected
edical grounds were in all cases given information as to
medical grading, and, if not so informed in all cases,
l he see that the practice was now changed —Captain
R Margesson replied It is the practice to inform all
bers of the Army Officers Emergency Reserve in which
cal category they have been placed, except in amputation
for which no grading exists In the latter cases, mem-
are told whether or not they are fit for employment

ttendance of Recruits for Medical Examination

G Muff asked the Minister of Labour whether he was
e that persons had refused to attend for medical examina
after proper registration for military service, and could
tate the policy of the Government in such cases —Mr
est Bevin replied Proceedings are taken when appro
e in order to secure attendance before a medical board
e difficulty has arisen in certain cases where men have
ed to submit to a proper medical examination and I am
idering whether the law needs strengthening in this
exion

Rehabilitation of Injured Workers

r Morgan asked the Minister of Health what steps were
g taken to secure modern and adequate fracture treatment
dustrial injured workers, whether the organisation of
treatment would be on the lines recommended by the
A committee and by the Delevingne interdepartmental
mittee in approved fracture clinics in hospitals or other
res, whether appropriate steps were being taken or
ded to be taken to secure the necessary subsequent
notherapy as well as proper rehabilitation and retraining
the stage of minimum residual disability had been
hed, and whether, having regard to the need for national
omy and for the provision of similar treatment in cases of
ries in other than industrial workers, he would consider,
oöperation with the other Government departments
erned, the advisability of the immediate establishment of
mprehensive national scheme for the future treatment and
bilitation of all injured persons —Mr Brown replied
onjunction with the Minister of Labour and Secretary of
e for Scotland I am considering the better organisation of
uties for the fracture treatment, rehabilitation and, where
ssary, retraining of injured industrial workers, and will
e a further statement as soon as possible

Sickness Benefit for Fire-watchers

Ir G A Isaacs asked the Home Secretary whether
ons suffering illness caused by the carrying out of duties
heir place of employment as fire watchers from exposure to
elements or from fatigue arising from long hours without
quate rest would, as such risk was not part of the normal risk of their employment, be entitled to their wages during incapacity, or would they be covered by the provisions of the Personal Injuries (Civilian) Scheme, and what would be their position and rights under the National Health Insurance Regulations —Mr Herbert Morrison replied I am advised that a person carrying out duties as a fire watcher at premises which are business premises as defined in regulation 27A of the Defence (General) Regulations will be covered by the Personal Injuries (Civilians) Scheme in respect of any physical injury which is certified to have arisen out of and in the course of the performance of his duties In respect of such an injury sickness and disablement benefits under the National Health Insurance Acts will not be payable for the first 26 weeks and will, for any period after the first 26 weeks, be subject to the adjustments laid down in section 7 of the National Health Insurance and Contributory Pensions (Emergency Provisions) Act 1939

Advisory E H S Committee

Dr Morgan asked the Minister of Health if he would state the constitution, personnel and functions of the Advisory Emergency Hospital Service Committee, who was responsible for its formation, when it was formed and how were its members appointed, who nominated them, and how often and where had this committee met up to date —Mr Brown replied This committee consists of representatives of the Royal Colleges of Physicians, Surgeons, and Obstetricians and Gynæcologists and also of group officers, the Central Medical War Committee, the London County Council, the staffs of London voluntary hospitals, and the medical profession in the provinces, with the secretary and deputy secretary of the C M W C Its function is to advise the Minister of Health on the organisation of medical personnel in the Emergency Medical Service The committee was first appointed in October, 1939, and subsequently enlarged, by the C M W C, and was reappointed by that committee in the present month The members are nominated by the bodies they represent or directly appointed by the C M W C, as the case may be The committee has met on nine occasions at the offices of the C M W C

Grants to Universities

Mr K W M Pickthorn asked the Chancellor of the Exchequer if he could now make a statement on the Treasury grant in aid of the universities and colleges during the coming financial year —Sir Kingsley Wood replied The House will recall that, in view of the vital part played by the universities in the life of the community, the importance of maintaining as far as possible the standards of university education, and the essential contribution which the universities were making in a variety of ways towards the national effort, it was decided to maintain the provision for the current year at the same level as that in 1939—namely, £2,149,000 These considerations have lost none of their force and despite the increasing strain on the national finances, the Government, after considering a report from the University Grants Committee, have reached the conclusion that if the universities are to continue their present contribution to the national effort, the provision for 1941 must be maintained at the existing level They earnestly hope that local authorities will take similar action

Blood Donors

In reply to a question Miss F Horsbrugh said that there was no general shortage of blood donors, but that in certain areas more were needed Local campaigns were being organised in those areas

Distribution of Unrationed Commodities

Mr David Adams asked the Chancellor of the Exchequer whether, in view of the urgent necessity of preventing both inflation and malnutrition, he was cooperating with the Minister of Food in devising a scheme whereby a minimum supply of essential foodstuffs should be guaranteed to each household in the country —Sir Kingsley Wood replied The Ministry of Food is giving consideration to a general scheme for improving the distribution of unrationed commodities In the course of these considerations the Treasury among other departments concerned has been consulted and is giving the fullest possible cooperation in trying to solve the problem

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The New Zealand minister of health has announced that the free general practitioner service, provided for in the Social Security Act, will come into force today (Saturday) demonstrated what a large part the ingredients of that breakfast—wholemeal bread, milk, butter or vitaminised margarine, cheese, salad and fruit—played in our diet, if we could have those kinds of food we might say all other things would be added unto us Lord Dawson urged the Ministry of Agriculture to take every step possible to secure greater milk production But milk was needed immediately, and to augment the liquid supply Lord Dawson advocated the importation of powdered whole milk and powdered skim milk to our full capacity He also suggested the importation of vegetable protein in the form of powder Cheese was an invaluable food and undoubtedly its present absence from our dietary was a serious loss If it could possibly be avoided he thought that our people should not be deprived both of meat and cheese at the same time He congratulated the Government on the approaching accouchement of the standard wholemeal loaf "Let our people have bread and milk and potatoes, and a moderate amount of protein food," he said in conclusion, "and I am sure that all will go well"

Lord **WOOLTON**, Minister of Food, made no attempt to hide the probability of still further food restrictions It was impossible, he said, for us, or any nation, to wage war and live to the standard to which we had grown accustomed We would have to go back to the days of simpler living The bread supplies of the country were ample and cheap, and the price was substantially unchanged from the pre-war price He had been fortified in his bread policy by much scientific advice Our greatest weakness was in the animal protein group—bacon, eggs, cheese and meat He expressed great concern about the shortage of some of those commodities, particularly cheese So long as the Mediterranean campaign went on he saw no possibility of increasing the meat ration from its present figure He had been greatly encouraged by the views on meat which Lord Dawson had given to the House Meat was not indispensable and we had potatoes and vegetables and oils We also had milk and with these things surely we could get all the energy and health that we needed So far as supplies of animal feeding stuffs were available he intended to see that they were used for the maintenance first and foremost of our dairy herds He was trying to work out a plan to secure that the available supplies of cheese went to the people who needed it in their work Months ago he had arranged for the importation of all the powdered and skimmed milk which we could get from overseas We were holding in this country powdered milk so that in an emergency milk would still be available for the public, particularly for children and those in the hospitals *He hoped that it would not be long before* something was done to reduce the demand made by the armed forces on our food-supplies

State Subsidised Food

Another debate in the House of Lords affecting national health was raised last week by Viscount **ASTOR**, who asked the Government whether they intended to develop the policy of subsidising meals, especially for pregnant women and for children, in order to improve the physique, health and mental development of the rising generation and to economise foodstuffs He pointed to the decline in the consumption of milk under the cheap milk in schools scheme from 2½ million gallons in October, 1938, to 1½ million gallons in October, 1939, and said that this serious state of affairs was likely to prejudice the welfare of a considerable number of children In about half of the local education authority areas in England and Wales no provision was made for free meals for necessitous under-nourished children and in many areas where such provision was made it was insufficient While making due allowances for the difficulties which now faced local authorities Lord Astor contended that many of them have not done as much as they could in this important matter He admitted that under the circular which came into operation last July an enormous contribution had been made to the physical welfare of children at an age when their feeding was of primary importance But he urged that the benefits of this milk scheme (by which any child up to the age of five years where the family income does not exceed 40s a week is entitled to a pint of milk a day) should be extended to include children over the age of five He also hoped that the principle which had been adopted by this milk scheme would be continued after the war was over

Lord **WOOLTON** said he had spent a great deal of his time and energy in establishing clinics and trying to persuade education authorities to provide meals and milk for necessitous slum children in Liverpool It was true, as Lord Astor had said, that the consumption of milk in schools had dropped by a million gallons, but the total increase in the consumption of milk by the population as a whole had increased by five million gallons a month Most important of all, the consumption of milk by people who were recognised as having prior necessity had risen to ten million gallons a month We were now drinking, and were likely to continue to drink, all the milk that the agricultural industry could provide Indeed, he was fearful lest the industry might be unable to provide all the milk which the people were being taught to drink The number of local authorities who were now making this provision had increased from 200 to over 250 but the President of the Board of Education was pressing on still further The Government fully recognised that now that women were being drawn into factories there would be more need for meals in schools For that and other reasons he had taken active steps to secure that there should be communal feeding centres throughout the country

QUESTION TIME

R A M C Training

Lord **DAVIES** asked the Government whether they would consider the desirability of providing units of the R A M C now stationed in country districts with facilities for practical training by arranging for them to be drafted in suitable instances to urban areas which had suffered or were likely to suffer heavy casualties as a result of enemy action in order that they might assist the first aid and hospital services in their district —Lord **CROFT**, under secretary of state for war, replied that the Government were willing to provide facilities for the training of the R A M C units in urban areas or to assist hospital services in that district where this did not interfere with unit training in military formations and the military commanders agreed that the units could be detached for the assistance of civil authorities

Allocation of Doctors

Sir **FRANCIS FREMANTLE** asked the Minister of Health what steps he proposed to take to decide the respective priority of needs of medical practitioners between those of the civil population, of local authorities and of the fighting services —Mr E **BROWN** replied The questions of priority referred to by my hon friend have already been considered by the committee on the allocation of medical man power and action is being taken on their recommendations I am considering with the other ministers concerned what organisation should be set up to deal with similar questions that may arise in future

Dr H B **MORGAN** asked the Minister whether he was aware that disquiet existed by reason of many doctors under 45 years of age being appointed to reception areas at the instance of local medical war committees or the Central *Medical War Committee*, and would he investigate the position having regard to the needs of the armed forces for doctors and to the fact that many doctors, either with greater domestic responsibilities or more advanced in years, were available for professional work in reception areas —Mr **BROWN** replied I am informed that most of the doctors transferred from vulnerable areas to reception areas at the instance of the C M W C or its local committees are over 45 years of age In any case all doctors of military age come up for consideration with a view to selection for service with the Forces The C M W C would be glad to have particulars of the doctors referred to in the last part of the question as being available for professional work in reception areas

Registration of Alien Doctors

Sir **HENRY MORRIS JONES** asked the Minister in connexion with the recent regulation permitting the temporary registration of alien doctors in this country for the purpose of medical work in the war effort, how many alien doctors had so far been granted this recognition, stating the number in the category of nationality, and how many were in the services, and whether the present machinery for facilitating this registration was working satisfactorily in view of the present urgent demand for trained medical personnel —Mr BROWN replied I am informed that 18 alien doctors, all of whom are citizens of the U S A., have so far been registered under an order of September, 1940, which applies only to such citizens and to Canadians I am not aware that any of this group of doctors are in the fighting services Under a more comprehensive order of January, 1941, the cases of some hundreds of alien doctors, who are of allied nationality or refugees from enemy countries, are being investigated as speedily as possible, but none have yet been registered

Mr R W SORENSEN Why are Spanish refugee doctors not given the same opportunity as other refugee doctors in being permitted temporarily to practise in this country, and will the Minister take steps to remedy this —Mr BROWN The object of the order is to facilitate the enrolment of [illegible] foreign doctors in such services as the armed forces [illegible] own countries present in the United Kingdom and the [illegible] service of this country So far as I am aware these [illegible] would not benefit to any appreciable extent by [illegible] to the list of territories specified in the order

Exchange of Medical Officers

Mr T E GROVES asked the Minister whether a scheme had been prepared for the exchange of medical officers of hospitals in bombed areas with those in less active areas, and, if so, what was the procedure —Mr BROWN replied No arrangements for such exchanges have yet been found necessary, but the matter is being kept under review

Medical Grading of Emergency Reserve Officers

Sir REGINALD BLAIR asked the Secretary of State for War if members of the Army Officers Emergency Reserve rejected on medical grounds were in all cases given information as to their medical grading, and, if not so informed in all cases, would he see that the practice was now changed —Captain H D R MARGESSON replied It is the practice to inform all members of the Army Officers Emergency Reserve in which medical category they have been placed, except in amputation cases for which no grading exists In the latter cases, members are told whether or not they are fit for employment

Attendance of Recruits for Medical Examination

Mr G MUFF asked the Minister of Labour whether he was aware that persons had refused to attend for medical examination after proper registration for military service, and could he state the policy of the Government in such cases —Mr ERNEST BEVIN replied Proceedings are taken when appropriate in order to secure attendance before a medical board Some difficulty has arisen in certain cases where men have refused to submit to a proper medical examination and I am considering whether the law needs strengthening in this connexion.

Rehabilitation of Injured Workers

Dr MORGAN asked the Minister of Health what steps were being taken to secure modern and adequate fracture treatment for industrial injured workers, whether the organisation of such treatment would be on the lines recommended by the B.M.A. committee and by the Delevingne interdepartmental committee in approved fracture clinics in hospitals or other centres, whether appropriate steps were being taken or intended to be taken to secure the necessary subsequent physiotherapy as well as proper rehabilitation and retraining after the stage of minimum residual disability had been reached, and whether, having regard to the need for national economy and for the provision of similar treatment in cases of injuries in other than industrial workers, he would consider, in coöperation with the other Government departments concerned, the advisability of the immediate establishment of a comprehensive national scheme for the future treatment and rehabilitation of all injured persons —Mr BROWN replied In conjunction with the Minister of Labour and Secretary of State for Scotland I am considering the better organisation of facilities for the fracture treatment, rehabilitation and, where necessary, retraining of injured industrial workers, and will make a further statement as soon as possible

Sickness Benefit for Fire-watchers

Mr G A. ISAACS asked the Home Secretary whether persons suffering illness caused by the carrying out of duties at their place of employment as fire watchers from exposure to the elements or from fatigue arising from long hours without adequate rest would, as such risk was not part of the normal risk of their employment, be entitled to their wages during incapacity, or would they be covered by the provisions of the Personal Injuries (Civilian) Scheme, and what would be their position and rights under the National Health Insurance Regulations —Mr HERBERT MORRISON replied I am advised that a person carrying out duties as a fire watcher at premises which are business premises as defined in regulation 27A of the Defence (General) Regulations will be covered by the Personal Injuries (Civilians) Scheme in respect of any physical injury which is certified to have arisen out of and in the course of the performance of his duties In respect of such an injury sickness and disablement benefits under the National Health Insurance Acts will not be payable for the first 26 weeks and will, for any period after the first 26 weeks, be subject to the adjustments laid down in section 7 of the National Health Insurance and Contributory Pensions (Emergency Provisions) Act 1939

Advisory E H S Committee

Dr MORGAN asked the Minister of Health if he would state the constitution, personnel and functions of the Advisory Emergency Hospital Service Committee, who was responsible for its formation, when it was formed and how were its members appointed, who nominated them, and how often and where had this committee met up to date —Mr BROWN replied This committee consists of representatives of the Royal Colleges of Physicians, Surgeons, and Obstetricians and Gynæcologists and also of group officers, the Central Medical War Committee, the London County Council, the staffs of London voluntary hospitals, and the medical profession in the provinces, with the secretary and deputy secretary of the C M W C Its function is to advise the Minister of Health on the organisation of medical personnel in the Emergency Medical Service The committee was first appointed in October, 1939, and subsequently enlarged, by the C M W C, and was reappointed by that committee in the present month The members are nominated by the bodies they represent or directly appointed by the C M W C, as the case may be The committee has met on nine occasions at the offices of the C M W C

Grants to Universities

Mr K W M PICKTHORN asked the Chancellor of the Exchequer if he could now make a statement on the Treasury grant in aid of the universities and colleges during the coming financial year —Sir KINGSLEY WOOD replied The House will recall that, in view of the vital part played by the universities in the life of the community, the importance of maintaining as far as possible the standards of university education, and the essential contribution which the universities were making in a variety of ways towards the national effort, it was decided to maintain the provision for the current year at the same level as that in 1939—namely, £2,149,000 These considerations have lost none of their force and despite the increasing strain on the national finances, the Government after considering a report from the University Grants Committee, have reached the conclusion that if the universities are to continue their present contribution to the national effort, the provision for 1941 must be maintained at the existing level They earnestly hope that local authorities will take similar action

Blood Donors

In reply to a question Miss F HORSBRUGH said that there was no general shortage of blood donors, but that in certain areas more were needed Local campaigns were being organised in those areas

Distribution of Unrationed Commodities

Mr DAVID ADAMS asked the Chancellor of the Exchequer whether, in view of the urgent necessity of preventing both inflation and malnutrition, he was coöperating with the Minister of Food in devising a scheme whereby a minimum supply of essential foodstuffs should be guaranteed to each household in the country —Sir KINGSLEY WOOD replied The Ministry of Food is giving consideration to a general scheme for improving the distribution of unrationed commodities In the course of these considerations the Treasury among other departments concerned has been consulted and is giving the fullest possible coöperation in trying to solve the problem

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The New Zealand minister of health has announced that the free general-practitioner service, provided for in the Social Security Act, will come into force today (Saturday)

Obituary

JOHN McFADYEAN

KT, M B, B SC EDIN, LL D ABERD, F R C V S

Stuart London

Sir John McFadyean, who died on Feb 1 at the age of 87, did more than other any man in the past hundred years to put veterinary science on a sound footing, and it is largely due to his efforts that the standard of veterinary training has been raised from a two-year course to a five-year course with the same conditions of entry as are demanded by a university

Born and brought up on his father's farm in Wigtownshire, he had the best possible upbringing for a veterinary career, and the knowledge he then gained of the practical management of livestock and the land provided the background on which he based his essentially sound conclusions on a wide range of subjects After leaving the Ewart Institute at which he was educated, owing to the uncertainty of the outlook for agriculture he decided to adopt the veterinary profession He studied at the Edinburgh Veterinary College—now the Royal (Dick) Veterinary College—and was admitted a member of the Royal College of Veterinary Surgeons in 1876 Shortly after graduation he joined the teaching staff of the Edinburgh College as lecturer in anatomy

His dissatisfaction with the existing standards of teaching led him to study human medicine at Edinburgh University, where he graduated M B in 1882, taking his B Sc in the following year For a short time he carried on medical practice in addition to his teaching duties, but he did not find it congenial and determined to devote himself solely to his duties at the college He was always much drawn to the subjects of bacteriology and pathology, and in 1892 he accepted an appointment to teach these subjects at the Royal Veterinary College in London, later becoming the first holder of the professorship of comparative pathology there In 1894 he became principal of the college, and he held this appointment until his retirement in 1927 He set a high scientific standard in all his work and his students will remember the clarity with which the principles of bacteriology and pathology were placed before them, and the meticulous care with which all bacteriological and post-mortem examinations were carried out

In 1888, while still in Edinburgh, he had undertaken the publication of the *Journal of Comparative Pathology and Therapeutics*, whose acceptance of an article soon came to be regarded as the hall-mark of scientific accuracy Possessed of keen analytical powers, his criticisms were at times devastating, but on more than one occasion they were found to be of the greatest value in enabling scientific bodies to arrive at sound conclusions on matters of importance

Like many other workers fully occupied in research, teaching, and administration, McFadyean found little time for writing His one textbook, " The Anatomy of the Horse," has become the standard dissection guide for students and he also completed the first part on *osteology of a projected work on the comparative anatomy* of the domesticated animals

His contribution to veterinary anatomy was notable, but it is exceeded by his work on bacteriology pathology and the control of contagious disease In his evidence before the Royal Commission on Tuberculosis, he insisted that measures for the control of bovine tuberculosis were essential for the protection of the human race, and later he played a prominent part in bringing about legislative and administrative measures for the proper inspection of milk and meat For these services the Royal College of Physicians in 1933 awarded him the Weber-Parkes prize and medal His work on glanders and mallein enabled that disease to be stamped out of this c and brought under control in all the more pro countries of the world Indeed, he was a pion great development of comparative pathology taken place since the middle of the past century

His students will always remember John Mc as a great personality, distinguished of aspect and terrifying to the shy, but blessed with a keen s humour and a natural kindness which, despite discipline he maintained, won him affection and as a teacher and a scientist

In 1883 he married Mara Eleanor, daughter of Walley, principal of the Royal (Dick) Veterinary Edinburgh She died in 1929, and they leave and two daughters

SIR WILLIAM HORROCKS

THE death of William Heaton Horrocks rec many of his friends first of all the story of so surely stamped out in Malta by his A M D report of 1861 contains a treatise on the Malta by assistant surgeon J A Marston, M D, Royal Artillery, in which he described a type of ranean remittent," or " gastric remittent " fever, to carefully distinguished from typhoid In 1887 Su Major D Bruce, A M S, discovered the causative ism of the disease, isolating it from six consecutive and giving it the name *Micrococcus melitensis* T years later, Captain M Louis Hughes (killed in 1 when serving on General Buller's staff in South A in his book " Mediterranean, Malta or Undulant Fever, gave a clear account of the symptoms and signs of disease confirming Bruce's discovery of the organism In 1903 when Major Horrocks was ferred to the Royal Society commission, the germ then been recognised for sixteen years , every p measure that could be thought of had been taken to rid of it , and yet the disease continued to take its of life and health unabated The commission, under Bruce himself, investigated every means by the germ might be spread from man to man members (Horrocks, Crawford Kennedy, I E A Shaw, and others detailed for duty from time time) showed how the micrococcus escaped from human body , showed too that though it could transferred, though very rarely, to the monkey by bites of infected mosquitoes, ecto-parasitis pr played but a small part in its transmission , monkeys were easily infected, either by feeding inoculation And then, suddenly, Horrocks and reported real progress They started to examine Maltese goat, proved that it was easily infected by ing, and with the help of Captain Kennedy that a 41% of these animals agglutinated the germ , approximately 10% passed it in their milk, and these very creatures were supplying the hospitals as as the rest of the garrison ! We can recall a shown to the promotion class by the late Sir W Leishman, setting out the incidence of undulant contracted before and immediately after the stoppage goats' milk to the garrison of Malta It was one of most striking examples that could be conceived of elimination of an infection

This was, perhaps, the most valuable piece of w done by Horrocks in preventive medicine, but t were many other points on which he threw much and many problems which he helped to solve Wh assistant professor of hygiene he published his " In duction to the Bacteriological Examination of Water, for long a standard work on this subject Later published papers on varieties of intercepting traps f domestic sewage and studies on the liberation of from the bursting of bubbles and from other sources drains He demonstrated the passage of ant bacilli into the milk of a cow suffering from the dise and demonstrated the presence of bacilli in the milk a female goat artificially infected He also cal attention to the agglutination test as a means of diagnos between *Bact typhosum* and the coliform organ With Colonel Firth he edited Parkes's " Theory Practice of Hygiene," and the second edition of " Notte and Firth " For many years Horrocks was a member the Army Medical Advisory Board, chairman of th Army Hygiene Committee, and chairman of the A mittee As chief sanitary adviser to the Army he responsible for designing the "Horrocks box"—a ble contrivance for the testing and chlorine sterilition of water As chairman of the anti-gas committee played an important rôle in the elaboration of measures the defence of our troops against noxious gases was editor of the R A M C *Journal* for thirty-two s. and will be grievously missed in this capacity as as in many others by officers of his old corps

rrocks was educated at Owens College, Manchester raduated in London later, taking his M A in 1883 time he was a resident at the Brompton Hospital then transferred to the Guildford Hospital While , a chance conversation with a patient made him , of the Army, and he joined the Army Medical ce, "a step," says his daughter "which he never regretted" He married while in India in 1895, , daughter of the Rev J C Moore, of Connor co m with whom he led a life of unclouded happiness l her death in 1921 Of the two children of the riage, one, Brigadier B G Horrocks, is at present mmanding an infantry brigade His daughter was his aithful companion until his death S L C

PROF K F WENCKEBACH

Sir Arthur Keith who formed an intimate friendship with Professor Wenckebach in the opening years of this century writes Although it was as a cardiologist that Karl Wenckebach became known in the world of medicine, he is still quoted by embryologists for a research on the development of certain fish carried out when a student at Utrecht, and after he had settled to country practice in the Limburg province of Holland he came back from time to time to explain to his old professor of physiology that the irregularities of the heart observed by the professor in experimental frogs were also to be found among his patients Hence it came about that while James Mackenzie in Burnley approached the problems of the heart through the jugular pulse, Wenckebach, who was called to the chair of medicine at Groningen in 1901, studied them through the arterial pulse

From his youth Wenckebach was drawn towards our literature and our British ways of life, he was quick to perceive that the physician in Burnley represented a new power in British medicine, and a close and intimate friendship sprang up between them Both were big men—big in body, in mind and in the intensity of their interests and feelings Both had deep and burning convictions—not only concerning the misdemeanours of the heart but concerning disease in all its manifestations Mackenzie had much of the fighting Scottish convenanter in him, Wenckebach had grown up in touch with the best musical, literary and art circles of the Hague, several of his relatives had made their reputation as artists, his eldest son has become a well-known sculptor Both men—Mackenzie was Wenckebach's senior by nearly ten years—having active brains and strong tempers as well as warm hearts had reason to complain of each other from time to time, but their correspondence and friendship were never interrupted for long

Soon after I got to know Wenckebach I was investigating the relationship of visceroptosis to respiration I found he was making a similar investigation and was invited by him to Groningen to see cases in which the viscera had descended so far that the diaphragm no longer could cause descent of the abdominal viscera After days of demonstration he carried me to the coast at Harlingen, where the great professor entered into all the "fun of the fair" like a schoolboy on holiday He was an intensely lovable man—yet proud—a quality which helped to shape his strange career In 1910 the chair of medicine in Amsterdam was vacant and he was invited to fill it He informed the authorities that he would accept only if the department was reformed and re-equipped The authorities countered by appointing another and Wenckeback retaliated by accepting in 1911 an invitation from Germany to fill the chair of medicine in Strassburg In 1914, when war broke out, he was on his way to fill the chair of medicine in Vienna, His heart in these wanderings remained true to Holland It was characteristic that on resigning his chair in 1929 when he reached 65 the age he held to be the limit of effective service in a professor, he stated that he was still uncertain as to the most effective method of teaching his subject, but he was convinced that "intellectual contagion" was a first essential

Wenckebach was representative of that wonderful breed of men to be found in the Netherlands which has the gift of tongues as well as of intellect Few men born and bred in foreign countries can break through our British barrier and make us feel they are fellow countrymen Wenckebach could do this and make us laugh too, for he had a keen sense of humour We of English-speaking countries will miss him for many a year, for he was a most effective link between the English world of medicine and that which lies outside it

GEORGE HENRY MASSON

O B E, M D, D SC EDIN, F R C P E

Dr G H Masson medical officer of health for Port-of-Spain, who died recently, had done much to improve the public health of the West Indies He qualified at the University of Edinburgh in 1895, and, as befitted a student of Sir Robert Philip, as tuberculosis officer he early established a dispensary scheme in Port-of-Spain which was in advance of some English ones of that time To practical experience he added academic distinction taking his M D in 1897 and his D Sc in public health in 1907 He was elected to the fellowship of the Royal College of Physicians of Edinburgh and the Royal Society of Edinburgh He studied in Paris, Berlin and Vienna and had the gift of tongues But he wore his learning modestly and won affection as well as respect from his colleagues On the next page our account of Dr Marcano's report of the health of Port-of-Spain in 1939 suggests that the problems Masson faced in his work differed from our own only in degree

CHARLES WILLIAM CHAPMAN

M D DURH, M R C P

Dr C W Chapman, who died on Jan 31, was born in London in 1843 He qualified from Guy's Hospital in 1868 and, after being physician to the Farringdon General Dispensary in 1892 he joined the staff of the National Hospital for Diseases of the Heart Here he gave all his thought and energy in arousing the hospital from the lethargy into which it had sunk since its foundation in 1857 The Adam house in Soho Square was no longer suitable for a hospital and in 1912 the hospital was rebuilt on the site of Dr Haweis's chapel in Westmoreland Street, where it stands today Chapman was active in the selection of the site and the supervision of the building Soon after the last war he retired from the staff of the hospital, but he continued his private practice for some years and retained to the end the confidence of his patients He was always greatly interested in children and wrote a book on Heart Disease in Childhood and Youth At the age of 83 he also wrote a small handbook for students on The Heart and its Diseases, and for several years he contributed annual reviews of the literature of cardiology to the *Practitioner*

WESTMINSTER PAST AND PRESENT —The Editor of *The Broad Way*, the journal of Westminster Hospital, writes to say that four etchings of the hospital in 1734, 1834, 1934, and 1939 will appear as a free supplement in his next four issues The artist is one of the present students and the etchings are suitable for mounting and framing The first issue of *The Broad Way* containing one of these etchings will be published soon, and if any Westminster man would like to make certain of getting a complete set he should communicate with the editor

Public Health

From the Annual Reports

PORT-OF-SPAIN, TRINIDAD

For purposes of comparison with the health conditions of Britain, Dr Roderick Marcano's report of Port-of-Spain for 1939 may be taken as giving a typical picture of the health conditions in a tropical colony In 1921 the population of the city was 61,396 and the density 34 2 per acre In 1939 the population was 90,375 and density 35 6 Overcrowding, the curse of all cities, is greater in the tropics than it is here and its tendency has been to become worse Little progress was made in re-housing until quite recently, but in 1939 Port-of-Spain made some progress in this direction The population is pure " British "—that is, it is made up of all races under the sun and every conceivable combination thereof The various races which are subject to the Crown gain British citizenship but to a large extent retain their national habits and ancient metaphysics The political significance of this is enormous, but from the public-health point of view it causes great difficulties Feeding is the most important single problem confronting the health officer In Britain, where we all eat much the same foods and have much the same feeding habits, the food problem is difficult enough, but in the mixed communities of the Empire it is much more complicated Meteorological conditions in the Empire vary between all extremes of which the earth is capable, but though these influence health problems their influence is far less than was formally supposed , the general healthiness of a population is little affected by them directly, and all deleterious climatic influences are capable of suppression West Africa—the White Man's Grave of our fathers—is now as healthy for Europeans as Manchester is Strictly speaking there are no tropical diseases, but some diseases are localised because they are spread by living vectors which may have a local distribution Thus, sleeping sickness is limited to parts of Africa because it can be spread only by certain flies which have a limited distribution In Trinidad there are no diseases which might not occur in this country, but some, such as malaria, ankylostoma and a form of dengue, which here are curiosities, are there important But their influence on the health of the people is comparatively slight Of the 1503 deaths in Port-of-Spain in 1939, the number of those which would not appear on our list were 38 malaria, and 4 ankylostomiasis The only one of our diseases which does not appear on their list is scarlet fever, which for some unexplained reason is not seen, except as a curiosity, in any tropical country The vital statistics for Port-of-Spain for 1921 and 1939 differ little from those of English towns for 1891 and 1909, in fact, the health conditions of most tropical colonies are similar to those of England a generation ago, their trend is similar and their problems are similar Except that in temperate climates we do not now have to bother much over mosquito-spread diseases, or such food diseases as beriberi or endemic dropsy, health problems are identical in all parts of the world Tuberculosis, syphilis, respiratory infections and the diarrhœal diseases are the main enemies of human health and their problems are similar in kind everywhere We have taken Port-of-Spain, but had we taken Singapore on the other side of the earth, we should have been able to bring out much the same points

OLDHAM

The vital statistics of Oldham, like those of its sister towns, reflect the depression in the cotton county boroughs of the inter-war period The population reached its highest point of 148,300 in 1921, since when it steadily declined to 123,400 in 1939 Coincidentally, the birth-rate fell from 21 3 to 12 4 in 1933, rose to 13 3 in 1938 and fell again to 12 5 in 1939 The crude death-rate increased from an average of 16 4 in 1919–1928 to 17 4 in 1929–1938 and in 1939 rose further to 18 6 Corrected for transferable deaths, this shrinks to 15 7, but as the comparability factor is 1 12, the true death-rate was 17 6 compared with the rate of 12 1 for England and Wales These statistics might be those of a population losing by emigration of young adults, but the comparability factor being above unity tells us that this not so and that the loss is mainly due to loss in The infantile mortality was 60, the lowest recorded Oldham, but maternal mortality was 7 9, which exceptionally high Dr J T Chalmers Keddie's prehensive report contains a chapter on Oldham Co for Mental Health, a voluntary association affiliated the National Council for Mental Welfare, which is great interest, for Oldham council is a pioneer of a mov ment which was beginning at the end of the inter era Mental health was outside the province of hyg until quite recently and when it was taken in it found to have three formidable difficulties—it is personal , its work must be secret , and its p requires much which practitioners of medicine are not a position to deliver Its progress must therefore slow, but Oldham has made a successful start and wh is being done there is helpful

Infectious Disease in England and Wales

WEEK ENDED FEB 15

Notifications —The following cases of infectious dise were notified during the week smallpox, 0 , scarl fever, 1198 , whooping-cough, 3425 , diphtheria, 1175 enteric fever, 18 , measles (excluding rubella), 16,654 pneumonia (primary or influenzal), 2106 , puerperal pyrexia, 200 , cerebrospinal fever, 378 , poliomyelitis, 12, polio-encephalitis, 2 , encephalitis lethargica, 6 , dysentery, 174 , ophthalmia neonatorum, 62 No case of cholera, plague or typhus fever was notified during th week

The number of civilian and service sick in the Infectious Hospitals *of the London County Council on Feb 14 was 2086, including* scarlet fever, 285 , diphtheria, 322 , measles 728 , whooping cough, 190 , enteritis 23 , chicken pox, 196 , erysipelas, 58 mumps, 10 , poliomyelitis, 2 , dysentery, 8 , cerebrospinal fever, 75 , puerperal sepsis, 8 , enteric fevers 4 german measles, 2 , other diseases (non infectious), 82 , not yet diagnosed, 93

Deaths —In 126 great towns there was no death from smallpox, 2 (0) from enteric fever, 3 (0) from scarlet fever, 38 (3) from whooping-cough, 26 (5) from measles, 46 (1) from diphtheria, 36 (1) from diarrhœa and enteritis under 2 years, and 324 (50) from influenza The figures in parentheses are those for London itself

Liverpool and Yarmouth each reported one fatal case of enteric fever Liverpool had 6 deaths from diphtheria and Birmingham 5 Birmingham also had 5 fatal cases of whooping cough Deaths from influenza were scattered over ninety three great towns, Liverpool reporting 13, Blackpool 10, Newcastle on Tyne, and Bristol each 9

The number of stillbirths notified during the week was 213 (corresponding to a rate of 38 per thousand total births), including 21 in London

INCIDENCE OF INFLUENZA

In the week ended Feb 15 324 deaths were ascribed to influenza in the great towns—Feb 8, 261 (56) , Feb 1, 176 (45) , Jan 25, 120 (22) , Jan 18, 99 (17) , Jan 11, 69 (9) , Jan 4, 53 (8) The ratio of increase is thus appreciably l than between the two previous weeks The age distribu of the deaths continues to be normal In the Count London, the deaths decreased from 56 to 50 Hosp admissions in London for influenza, bronchitis and pn monia decreased from 811 to 526 and the daily records the current week show no sign of increase

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British Drug Houses Ltd have put on the mar a jelly containing 2% gentian violet and 0 02% sodiu ethyl mercuri-thiosalicylate which they recommend the treatment of second-degree and third-degree bur particularly of the hands, feet and face Clinical tr suggests that 2% rather than the 1% gentian vio hitherto in common use may be the optimal concent *tion for burns* Gentian Violet Jelly B D H is availa in 1½ oz and 4 oz tubes

Appointments

Billimoria B R , F R C S R S O at Frimley Sanatorium
Crichton, J P L R C P E , L D S , D P H temp asst M O for Stepney
Meade, Caroline, M B Lond , D P H temp asst M O H Stepney
Sambrook, D K , M B Lond asst M O at the County Counc Hospital and hutments annexe, Hereford

Medical News

University of Oxford

The Rockefeller Foundation have given the university [illegible] dollars for the purchase of equipment and research supplies and the provision of the salaries of assistants for Dr H W Florey in connexion with researches in general biochemistry at the Sir William Dunn school of pathology They have also made a similar grant of £1000 in connexion with research on the X ray analysis of biologically important large molecules by Mrs D M Hodgkin in the department of mineralogy and crystallography

University of Cambridge

At recent examinations the following were successful —

D.M R.E.

Part I Manfred Altmann, R. D Caton Arthur Fikeles, J E [illegible], Grace M. Griffith, Max Halberstaedter, and P C Phelps

Royal College of Obstetricians and Gynæcologists

The following have been elected to the fellowship of the college —

W C Armstrong Glasgow N L Edwards Derby A L Gunn London, Joan K. Rose Edinburgh, W A Taylor, Birmingham, and Robert Watson, Northampton

The DENTISTS REGISTER for 1941 just issued contains 15,032 names, or 22 more than last year But the total of new names (3[illegible]5) is less by 50 than in the previous year

At the section of surgery of the Royal Society of Medicine on Wednesday, March 5 at 2 30 P.M., Mr Julian Taylor and Mr R Watson-Jones will open a discussion on war injuries of the spine, and on March 7 at the section of otology at 10 30 A.M Miss D J Collier, Dr F S Cooksey, and Mr Terence Cawthorne will open a discussion on the limitations of operative treatment in facial palsy On the same day at 4 30 P.M. at the section of laryngology Mr E D D Davis will read a paper on chronic hyperplasia or focal osteitis of the maxilla

At the quarterly meeting of the directors of the Naval Medical Compassionate Fund, held on Feb 21 with Surgeon Vice Admiral Sir Percival Nicholls in the chair, the sum of £[illegible] 10s was distributed among the applicants

On Friday, March 7, at 1 45 P.M., Major General H Willans, director general of army welfare, will read a paper on that subject to the Royal Society of Arts The meeting will be held at the house of the society in John Adam Street, London, W C 2

Today, Friday, Feb 28 at 4 P.M at the University of Edinburgh Sir Joseph Barcroft, F R S, will deliver the Sharpey Schafer lecture He will speak on four phases of birth

In a recent casualty list Lieutenant J Cunningham, M.B, R.A.M C, is reported to have died

Messrs May and Baker have given a million tablets of M & B 693 to the Lord Mayor s Greek relief fund

Births, Marriages and Deaths

BIRTHS

[illegible]—On Feb 18 at Gloucester to the wife of Dr Denys [illegible]—a daughter

SHACKLETON BAILEY —On Feb 22 at Eye Suffolk the wife of Dr J Shackleton Bailey—a son

MARRIAGES

BURNFORD—EVERY —On Feb 22 at Uddingston David Wrexford Burnford M.R C.S surgeon lieutenant R.N V R elder son of Dr Julius Burnford to Sheila Philip Every

CRAN—LEBURN —On Feb 19 at Gateside Ian Rose Cran M R C S elder son of Dr Hugh Cran to Joy Leburn

TURNER—MEULEN —On Jan 4 at Christchurch Purley Richard W D Turner M D M R C.P, lieut -colonel R A.M C, to Paula Meulen

WILLATT—EVERSHED —On Feb 18 Ian Duncan Willatt M.B to Ruth Annette Jamie Evershed M B

DEATHS

BARKER.—On Feb 21 Ernest Marriott Barker M.B Camb, of White Rock Road Hastings

BEADLES —On Feb 23 at Romford Harold Shatford Beadles M R C.S

CREWDSON THOMAS —On Feb 19 at Bracknell George Crewdson Thomas M.D Edin. M R C.P E of Chester Square S W 1

HASSARD —On Feb 20 at Hindhead Edward Moresby Hassard Commander of the Order of Avis M R C S colonel R.A.M C (ret'd)

JOHNSON —On Feb 4, Lieut -Colonel Reginald Johnson M B E, M.D Dubl. lieut -colonel R.A M C

PROBYN —In February, by enemy action, Lesley Maude Campbell Probyn M R C S

AINING

WHITING —On Feb 9 at Torquay, Arthur John Whiting, [illegible] Edin. M R C P, aged 75

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Notes, Comments and Abstracts

TREATMENT OF CHILBLAINS

BY G I WATSON, M D Camb D T M & H

LIEUTENANT R A M C

PEOPLE who suffer from chilblains can be divided into two groups those who believe in calcium and those who do not The first of the following case-histories is that of a young woman who does not An observation of hers led me to use a treatment which has given her and others almost immediate relief from their chilblains

CASE 1 —A woman, aged 23, whose work includes driving and cleaning a motor car but is varied both indoors and out Two sisters suffer severely from chilblains, her mother and father have chilblains occasionally She has suffered in summer from urticaria, and blisters easily in direct sunshine She cannot remember a winter in which *she has not had* severe chilblains on both hands and on one or both feet She has been treated with calcium in large doses, both by mouth and by injection, together with vitamin D in various forms, but she has not been freed of chilblains even temporarily by such treatment One winter recently her chilblains were abolished when she stung her hand in some nettles She cannot recall whether the effect was only on the one hand or on all her chilblains

It is possible that H-substance which is closely allied to histamine is produced at the site of a sting, whether by nettles or bees I was using histamine experimentally for other purposes at the time and was familiar with its local effects after subcutaneous injection I offered with her active coöperation to inject one of her chilblains and to watch the result

On Nov 21, 1939, she was given a test dose of histamine (B.D H), 0 5 c cm, subcutaneously in the forearm, she developed a large weal with irritation round it, facial flush and frontal headache, no itching of chilblains On the 24th she was given 0 1 c cm of histamine, split into two doses, into a chilblain on the 3rd finger of her left hand, there was immediate itching but that night all itching in this chilblain ceased Next day I obtained the same result with a chilblain on her right hand, and by Dec 12, after several further injections, both hands, though scaly, were free of chilblains *Treatment of the right foot* was begun on Dec 2 and a second injection was given on Dec 12 By Dec 15 new chilblains had developed on her hands She began using bee toxin ointment (A. and H) first on her hands, and later on her feet alternated with injections of histamine At first the ointment produced itchiness without subsequent relief, but after three or four days the itching ceased and the skin became scaly as after injection Results seemed to be better if the ointment was applied after bathing in hot water, especially soft water The last injection of histamine was given on Jan 19, and on Feb 2 the calcium was stopped By Feb 9 she only experienced slight pricking in the hands and her feet were quite comfortable She continued to use the ointment locally

While these experiments were proceeding, two other patients presented themselves

CASE 2 —Male, 29, motor driver, suffering from moderately
severe chilblains on both feet On Dec 30, 1939, histamine,
0 3 c cm split into five doses, was injected into or near many [illegible] and
scattered chilblains on both feet Immediate [illegible] toxin former,
affected chilblains, not severe [illegible], with the less toxic strain given
that his chilblains h[illegible] they got good results by oral treatment with
after had been [illegible]ide and sulphapyridine, when intramuscular

CASE 3 —A[illegible] was adopted or when the actively toxigenic strain
chilblains, es[illegible]ed the results were poor and compared unfavourably
taking calc[illegible] serum, with *Cl septique* protection was only obtained
was not [illegible] sulphapyridine and then only on prophylactic adminis-
doses, [illegible]ation, and no protection was obtained from *Cl novyi*
Feet c[illegible] Singer (1940) worked with *mice and injected his cultures*
itchin[illegible] subcutaneously; treatment was oral with suspensions of
and h[illegible] prontosil, Uleron, sulphapyridine and Soluseptasine, his
beer[illegible] only clear success was with a single M.L.D of *Cl welchii*;
rep[illegible] there was a percentage survival with larger doses of *Cl welchii*
and with single doses of *Cl septique*, but the results were
, on too unequal to be convincing and no favourable results were
obtained with *Cl novyi* Henderson and Gorer (1940) used
heated spore suspensions of *Cl septique* in calcium chloride
solution and intradermal injection, in these conditions
sulphapyridine gave good protection and sulphanilamide
partial protection on oral administration up till 4 hours after
infection, results were much less convincing if injection of

spores was intramuscular or where *Cl welchii* preparations were used , the point particularly brought out in this work is that serum and sulphapyridine in the special conditions of these experiments can give results much greater than the summation of their separate effects

To summarise, the only encouraging results have been obtained in infections with small doses of some strains of *Cl welchii* when the drugs have been given before or very near the time of infection, and it is the general experience that for this purpose sulphapyridine is a more effective drug than sulphanilamide No-one has claimed better results with oral than parenteral administration, but Legroux (1940) has provided experimental evidence of the superiority of local over oral administration Jensen and others (1939) also claim that more is to be expected of local than oral administration since the former assures the presence of the drug up to the point of saturation in the vicinity of the wound, an effect which cannot be obtained with oral administration without risking grave intoxication For these reasons we have adhered in our work to parenteral administration of the drugs at the site of infection

EXPERIMENTS IN ANIMALS

Mice —A small preliminary series of investigations was made with mice which were injected with *Cl septique* subcutaneously The control of the infection was attempted with sulphanilamide and *p*-nitrobenzenesulphonamide, the drugs being administered half an hour before or immediately after infection The results are recorded in table I These experiments suggest an extremely limited degree of protection by these drugs when present from the outset of infection and a very slight superiority of the nitro compound, but nothing comparable to its superiority in vitro

TABLE I—ATTEMPTS TO CONTROL INFECTION IN MICE INJECTED WITH *CL SEPTIQUE* SUBCUTANEOUSLY DRUGS WERE INJECTED AT THE SITE OF INFECTION AND IMMEDIATELY BEFORE OR AFTER INFECTION

Infecting dose of culture (c cm)	Drug	No of mice	Result
0 5	Sulphanilamide 2–6 mg	6	All died , av time 21 hr
,,	Sulphapyridine 2–6 mg	6	All died , av time 23 hr
,,	*p* nitrobenzenesulphonamide 2–6 mg	6	All died , av time 26 hr
,,	Controls	7	All died , av time 20 hr
0 2	Sulphanilamide 1–20 mg	8	4 survived , 4 died within 36 hr
,,	*p* nitrobenzene sulphonamide 1–5 mg	8	4 survived , 2 died within 36 hr , 2 died after 36 hr
,,	Controls	8	All died , 6 before 36 hr , 2 after 36 hr
0 1	Control	1	Survived

Guineapigs —In most of the experiments guineapigs have been used, the thigh muscle of the anæsthetised animal being crushed by nipping with pressure forceps in order to reproduce conditions resembling those in which gas gangrene arises in man Twenty-four hour cultures in liver broth have been used and single lethal doses or very small multiples of the lethal dose have been administered *Cl welchii*, *Cl septique* and *Cl novyi* have been examined The results of these experiments are recorded in table II

TABLE II—ATTEMPTS TO PREVENT OR CURE INFECTION IN GUINEAPIGS INJECTED WITH *CL NOVYI*, *CL SEPTIQUE* OR *CL WELCHII* SUBCUTANEOUSLY

Injection	No of animals	Drug or antitoxin	Administration	No which died	Survival (%)	Average interval to death in days
Cl novyi	6	M & B 693	Prophyl , local	6 (1 de)	Nil	2 83
,,	3	M & B 693	Curative, local	3	Nil	<1
,,	3	Sulphanilamide	Prophyl , local	3	Nil	2 0
,,	2	*p* nitrobenzene sulphonamide	,,	2	Nil	1 5
,,	3	Antitoxin 1800 units	,,	0	100	
,,	3	Antitoxin 700 units	,,	0	100	
,,	3	Antitoxin 3600 units	Curative, local	3 (1 m de)	Nil	4 33
,,	3	Antitoxin 1400 units	,,	3	Nil	1 9
,,	10	Controls		10	Nil	2 0
Cl septique	18	M & B 693	Prophyl , local	7	61	2 4
,,	3	M & B 693	Curative, local	3	Nil	2 0
,,	7	*p* nitrobenzene-sulphonamide	Prophyl , local	6	14	1 3
,,	7	*p* nitrobenzene-sulphonamide	Curative, local	7	Nil	1 4
,,	16	Sulphanilamide	Prophyl , local	16	Nil	1 87
,,	7	Sulphanilamide	Curative, local	7	Nil	1 1
,,	8	Antitoxin 180–18 units	Prophyl , local	0	100	
,,	24	Controls		24	Nil	1 25
Cl welchii	6	M & B 693	Prophyl , local	0	100	
,,	3	M & B 693	Curative, local	3	Nil	1 0
,,	3	Sulphanilamide	Prophyl , local	1	66 6	2 0
,,	4	Antitoxin 700–7 units	,,	0	100	
,,	6	Antitoxin 3500 units	Curative, local	5	17	2 8
,,	6	Controls		6	Nil	1 5

m de = much delayed

Prophylactic (prophyl) *Administration* of drugs or antitoxin was carried out as two injections, the first 16 hr and the second ½ hr before inoculation The quantities given to each guineapig and methods of administration were as follows

M & B 693 Suspension of 0 2 g in 5 c cm of distilled water

Sulphanilamide Solution of 0 1 g in 5 c cm of distilled water (It was possible to inject a solution by dissolving with heat and injecting before the solution had cooled below body temperature)

p nitrobenzenesulphonamide Suspension of 0 05 g in 2 5 c cm "dispersol"

Curative administration —The same doses, methods and sites of administration were used in each case, but the times of administration were 4 and 7 hours after inoculation

These experiments afford no evidence that any of the three drugs used is of value in controlling an established gas gangrene infection, even when the interval before administration is very short They do, however, indicate a limited usefulness in the local administration of M & B 693 as a prophylactic agent In the last respect, however, they are distinctly inferior to specific antiserum which when given locally as a prophylactic was effective in infections with *Cl welchii* and *Cl septique* even in doses considerably less, weight for weight, than those recommended in the prophylaxis of gas gangrene in man This point, since it has an immediate practical bearing, has been further investigated in experiments in which the relative values of serum in prophylactic and curative administration have been carefully compared These observations are recorded in table III The striking contrast between the prophylactic efficiency of antiserum in *Cl septique* infection, and its failure in treatment was not observed when the virulence of the bacterium was less acutely developed—i e , when the controls survived till the second day In such experiments, of which several were made, treatment was successful, and in one of these even 50 units sufficed for cure when given four hours after infection, but in this experiment the lower limit of prophylactic protection was not reached with 1 unit

The results recorded in table III can now be considered in the light of (*a*) the recommendations made for the use of such sera in man, and (*b*) the ratio of the weight of man and guineapig They emphasise the fact that a dosage of serum equivalent to or less than that recommended for human prophylaxis is effective, whereas doses vastly greater than those recommended for treatment may be impotent within four hours of the initiation of infection They suggest that the doses likely to be effective in treatment will be at least 200–600 times greater than those effective in prophylaxis If it is legitimate to apply the findings in experiments on guineapigs to actual infection in man, it will follow that doses of antiserum 30–300 times greater than those recommended will still be ineffective in established cases of gas gangrene in man

A point which may prove of practical importance brought out in these experiments is that where you are dealing with a rapidly progressive gas gangrene infection there is an advantage in administering serum for prophylaxis in the area where the lesion exists and in which the development of such infection is expected So far as we are aware, attention has never been drawn to this point, and in fact we have failed to find in the literature any extensive observations on the relative values of the prophylactic and therapeutic uses of these sera It is, however to be noted that in the Medical Research Council s Report No 39 (1919) on anaerobic infections of war wounds, Ellis is quoted (p 130) as stating that the injection of anti-gas gangrene serum into and around the site of injury was attended with favourable results

CONCLUSIONS

From the results of experiments in mice and guineapigs, together with other work already published, it seems likely that the sulphanilamide drugs will have only a limited value in the prophylaxis of gas gangrene, and that local administration will be more useful than oral These drugs are not likely to be useful in treatment except in cases where there is a mixed infection with an aerobe susceptible to them In experimental work they are inferior to antisera in the prophylaxis of gas gangrene Antisera are so much more effective in prophylaxis than in treatment that while the former use is certainly justified it is doubtful whether the latter is It would therefore be well if the official recommendation to use antisera only for treatment and not for prophylaxis were reversed, provided waste by use on unsuitable cases was avoided There is no justification for withholding these valuable prophylactic agents from any person who is considered to be threatened with gas gangrene It is recommended that administration should take the form of multiple injections of serum into the muscles in the vicinity of the wound

TABLE III—EXPERIMENTS TO COMPARE THE RELATIVE VALUE OF SERUM WHEN GIVEN CURATIVELY AND PROPHYLACTICALLY TO GUINEAPIGS INFECTED WITH *CL WELCHII CL SEPTIQUE* AND *CL NOVYI*

Bacterium	Dose of serum	No of guineapigs	Curative	Prophylactic at site of injury	Prophylactic remote from injury
Cl welchii	1500 units	2	1 died 48 hr 1 72 hr		
	750	2	1 48 hr 1 72 hr		
	375	2	1 , 24 hr 1 48 hr		
	150	2		1 survived	1 survived
	75	2		,	,,
	30	2		,	
	15	2		,	,
	7 5	2		,	
	3 75	2			
Controls	None	2	1 died within 24 hr , and 1 within 48 hr		
Cl septique	600	2	Died 48 hr		
	150	2	,, ,,		
	50	2	, 24 ,,		
	25	2	,, ,, ,,		
	81	2		1 survived	1 died 24 hr
	27	2		,	, ,,
	9	2			,, ,,
	3	2		1 died 48 hr	, ,
Controls	None	3	Died within 24 hr		
Cl novyi	3750	3	1 died 24 hr 2 , 48 hr		
	500	2		1 survived	1 survived
	125	2		,	,,
	50	2			,,
	25	2		,	,
	12 5	2		,	1 died 3rd day
	6 5	2		1 died 3rd day	1 died 24 hr

Prophylactic injections of serum were made 2 hours before infection and injections of serum for treatment were made 4 hours after infection.

We wish to thank Dr A Mayr Harting for help with some of the observations, Dr S Ellingworth, of Imperial Chemical Industries Ltd, for preparing the suspensions of *p* nitrobenzenesulphonamide used, Mr J MacAvoy for his help with the animals, and the Medical Research Council for their grant towards costs

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PREVENTION OF PYREXIAL REACTIONS IN INTRAVENOUS THERAPY

By F A Knott, M D Lond, M R C P, D.P.H

DIRECTOR, BACTERIOLOGICAL DEPARTMENT GUY S HOSPITAL,

AND

B Leibel B Sc Med Toronto, M R C S

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It is disappointing to find that minor pyrexial reactions still often crop up as an unexpected complication of intravenous therapy To rectify this much thought has been given to perfecting blood-storage, plasma-filtration, chemical purification and the details of apparatus, but if reactions are to be reduced to a minimum everyone—operator, supply department and nursing staff—must remember several other pyrogenic factors. Most of these are well known to be associated with contamination of distilled water and the accessory chemical solutions or imperfections in equipment or technique, but how these faults commonly arise and the quickest methods of detecting them are not so generally appreciated The present E.M S central supply service leaves the preparation of solutions and the care of apparatus as a local responsibility, for some institutions a new one These notes are made on our past and present experiences of such work.

Reactions tend to occur in small outbreaks and their notification to the laboratories is usually accompanied by requests for "sterility tests" on the apparatus and solutions used But in practice we have found failures in sterilisation extremely rare and on most occasions other faults must be sought When investigating any particular group of reactions one starts with the knowledge that trouble may arise from transfusion of any of the following (*a*) dead bacteria, (*b*) free bacterial proteins; (*c*) traces of other foreign protein; (*d*) some non-protein particulate matter; and (*e*) various materials added to the solutions from glass-ware or rubber improperly cared for or too long in use

DEAD BACTERIA AND BACTERIAL PROTEIN

It is important to note how dead bacteria or their proteins come to be found in solutions stored in sealed, unopened, screw-capped bottles We have rarely seen, when microscoping the centrifuged deposit, any dead bacteria in the finally bottled products, because the last stage of preparation includes Seitz filtration immediately before the final sterilisation But filtration does not remove free protein, and nearly two-thirds of solutions proved to have caused reactions were found to contain minute traces of protein which could probably be accounted for by previous multiplication of bacteria in them When the final filtration was deliberately omitted several of these samples showed numerous dead organisms, and by random sampling in the preparation rooms their most common source was found to be infection of the stock solutions either just after distillation and before bottling of the distilled water in bulk, or at the time of adding the chemicals to make the final solutions

When distilled water is subsequently to be used intravenously, it is essential to adopt during distillation some closed system of delivery into clean, sterilised bottles which are immediately autoclaved, capped and tightly closed Any technique which allows infected water to stand for a time warm or at room temperature before it is bottled and sterilised may permit bacteria, though they may be very few to start with, to multiply vigorously In our experience the most common contaminants acting in this way have been gram-negative bacilli of the unclassified, non-sporing, non-chromogenic type, the reactions of which do not conform to those of any defined group (such as coliforms or *Bacillus proteus*) Many of these organisms readily multiply at room temperature in distilled water, particularly if the free ammonia content be high Even with perfect protection of the stock distilled water, solutions made from it may still become pyrogenic Organisms may be added with the chemicals, especially if these are taken from large tins or bottles some time in use Again it is imperative to remove the bacteria before they have time to multiply or add soluble protein Therefore, after dissolving chemicals, rapid filtration is required with closed delivery into screw-capped bottles and immediate sterilisation by whatever method is most appropriate The filtration method we favour is the use of a Seitz-EK 14 cm disc or its equivalent, followed by passage through a sterilised sintered glass filter to remove any fibres derived from the filter disc Whatever system is adopted, it must ensure that both the distilled water and the final intravenous solutions are at all times free from bacteria either living or dead

Detection of dead bacteria in the deposit of a suspected solution is a matter of simple microscopy When present they can have a surprisingly great effect, and such solutions are in fact very dilute vaccines As a method of inducing artificial pyrexia, a small intravenous dose of a coliform vaccine is well recognised ; experimentally we have repeatedly produced the same result with vaccine made from water contaminants Admittedly the number of organisms injected needs to be decidedly higher but a pyrogenic dose may easily be given if the volume of injected fluid is large

Solutions free from bacterial bodies but suspected of containing traces of protein require chemical examination Pyrogenic samples of this type have been found to give albuminoid-ammonia figures ranging from 0 005 to 0 025 part per 100,000, whereas none was present in the water coming freshly from the still In three outbreaks it was possible to obtain evidence that infection of the solutions had taken place during preparation At the time, to confirm the usefulness of the albuminoid-ammonia estimation, samples of distilled water showing a low free-ammonia content and complete absence of albuminoid ammonia were lightly infected with bacilli obtained from other distilled water After incubation for two days they were examined after Seitz filtration Albuminoid ammonia appeared in the filtrates in amounts varying from 0 005 to 0 008 part per 100,000

OTHER FOREIGN PROTEINS

In other outbreaks, although solutions from the same batch had been supplied to all, pyrexial reactions were most common in particular wards, usually those in which the nursing staff attempted to clean, sterilise and store the delivery apparatus for themselves Gross failure in cleaning calls for no comment, but the average nurse often fails to appreciate the extreme degree of chemical cleanliness essential for intravenous work, and trouble crops up in, to them, unexpected ways For example, nearly a quarter of the outbreaks we have investigated were found to be caused by the boiling of delivery bottles and rubber tubing in the large ward sterilisers repeatedly used for dishes and instruments Often traces of steriliser water dry and leave a barely noticeable film of carbonate on the inside of both bottles and tubes Being only slightly soluble, the film may be added to at each visit to the steriliser, and although this " hardness " is not in itself pyrogenic it may hold traces of protein derived from the steriliser or from previous use of the apparatus If some of the film is rubbed off into the distilled water it will usually raise the albuminoid-ammonia figure

The same effect may be produced in another way After repeated use the inner surface of rubber tubing may become hard, rough and covered with minute cracks, especially favouring the deposit of film or retention of traces of protein In three experiments we found that if previously safe normal saline (free from albuminoid ammonia) was run slowly through such tubing during gentle twisting and compression it produced severe pyrexia when, after sterilisation, it was injected intravenously In one case the albuminoid-ammonia content rose during passage through the tube from nil to as much as 0 05 part per 100,000 Cleaning and sterilising in a ward can thus readily fall below the required standards of real chemical cleanliness Failure to deal properly with taps, drips, filters and other parts possessing " back waters " is an obvious risk, but the two unsuspected fallacies described illustrate the great care necessary The best results can be obtained only when sterilisation is done in a laboratory department where perfect cleansing and all necessary replacements and renovations can be carried out at the same time In the wards little should be done except thorough flushing with clean cold water or weak soda solution The best subsequent procedures are fully described in the M R C memorandum on wound shock [1]

A further possible source of trouble is the still itself A series of reactions took place when reconstruction of part of the hospital made necessary the temporary use of a relatively old metal still When tested, the stored distilled water from this apparatus was found to be sterile and completely free from bacterial bodies and particulate matter, but to have an albuminoid-ammonia content as high as 0 0008 to 0 001 part per 100,000 ; this, of course, had been passed on to all the intravenous solutions A large quantity of this water was therefore redistilled from glass, and the albuminoid ammonia fell to vanishing point A fresh set of intravenous solutions was then prepared from this redistilled water and issued to the wards ; no further reactions took place Several similar experiences suggest that when a water-supply is at all below the highest standards double distillation from glass should be carried out ; and should an outbreak of reactions occur one of the first tests should be estimation of the albuminoid-ammonia content of the solutions This should not be above, say, 0 0002 part per 100,000 If the figure is appreciably higher, the cause should be sought in failure to protect the solutions from bacterial contamination or in direct entry of traces of foreign protein At present the still in use for our intravenous supplies is a steam-heated, automatic Manesty No 4 model (Manesty Machines Ltd , Liverpool) and the albuminoid-ammonia content of the distilled water delivered is nil

SUSPENDED NON-PROTEIN PARTICLES

Ideal intravenous solutions should contain no trace of particulate matter An official E M S warning was issued against the chalky and other powders to be found on new rubber Particles from " perished " rubber are equally objectionable, and preliminary washing should be very thorough In some of the earliest screw-capped bottles the cap-linings deteriorated and flaked Before general adoption of the screw-cap, the cotton-wool plug was a tiresome source of fibres ; vegetable or asbestos fragments may also be derived from filters, especially if filtration is hurried But our experience has been that non-protein particles in very small numbers are less liable to cause pyrexial reactions than is generally supposed It is not uncommon for unopened bottles to be returned to the laboratory because sharp eyes have detected a few floating specks in the contents, but (except in two instances in which a mould was the cause of the trouble) tracing the rest of the batch and deliberate intravenous use of the contents of the suspected bottles has always convinced us that they had no significant pyrogenic properties All our experience suggests that traces of foreign protein in any form are far more potent in producing reactions than any of the commonly encountered non-protein particles In any case, the presence of the latter can be largely avoided by passage, after Seitz filtration, through sintered glass, and by careful cleansing and renovation of all apparatus used

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[1] The M R C War Memorandum, No 1

SUMMARY

Pyrexial reactions complicating intravenous therapy may be due to the presence in the solutions used of dead bacteria or traces of other foreign proteins or non-protein particulate matter Foreign protein is the commonest cause

Dead bacteria or protein derivatives of them may be present as a result of faulty technique in distillation of water or sterilisation of apparatus, or of defects in outworn apparatus Solutions free from dead bacteria but containing traces of protein capable of causing pyrexia have been found to have an albuminoid-ammonia content ranging from 0 005 to 0 025 part per 100,000 This estimation is therefore useful in the detection and elimination of such contaminants

We thank Dr A H Douthwaite for giving us opportunity to test the pyrogenic properties of various solutions clinically, and Dr J H Ryffel and Mr E Hinks, B Sc, F I C, for confirmatory albuminoid ammonia estimations

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OXYGEN CAPACITY OF BLOOD

AFTER SOLUBLE HEXOBARBITONE ANÆSTHESIA

By E A PASK,[1] M B Camb D A

ASSISTANT NUFFIELD DEPARTMENT OF ANÆSTHETICS OXFORD

THE occurrence of a transient dilution of the blood during the period of action of certain of the anæsthetic barbiturates has been noted on several occasions

Bourne, Bruger and Dreyer (1930) found that in dogs the corpuscular volume fell by as much as 30% during Sodium Amytal anæsthesia, but in no case did any material dilution persist for more than 5 hours after recovery Adolph and Gerbasi (1933) noticed similar changes, and Searles (1939) found that the erythrocyte count fell by some 15% but that this did not occur in splenectomised animals Dallemagne (1935, 1938), however, reported a different and more serious effect · a decrease of some 50% in the oxygen capacity of the blood in dogs after the administration of soluble hexobarbitone The oxygen capacity remained at its minimum level for at least 10–14 days, after which it slowly returned to normal The effect was accentuated when repeated doses were given, and in one animal, which received 17 mg of soluble hexobarbitone per kg of body-weight on 3 occasions at intervals of a month, the oxygen capacity fell eventually from 20 to 4 volumes % These changes Dallemagne attributed to a destruction of erythrocytes H K Beecher (1938) in a short series of intensive experiments was unable to confirm these findings In one of his experiments a dog received 30 mg of soluble hexobarbitone per kg of body-weight on 22 occasions at intervals of a week, but no evidence of anæmia was found Beecher was also unable to advance any explanation for the anæmia which occurred in Dallemagne's experiments

It seems unlikely that changes of the magnitude noticed by Dallemagne could follow soluble hexobarbitone anæsthesia in man without giving rise to clinical signs or symptoms The possibility of such changes is, however, so serious that—attention having been directed to it by several observers (e g Wynne 1940)—it seemed advisable to investigate the blood-oxygen capacity directly in a short series of patients after soluble hexobarbitone anæsthesia

The results and data concerning the patients are shown in the table Coagulation of blood samples was prevented by oxalate All estimations were duplicated, the Van Slyke manometric method being employed for cases 1–3 and the Haldane method for the remainder In none of the operations was there any considerable loss of blood In the figure the blood-oxygen capacity levels are represented graphically, in each section the central horizontal line represents the preoperative level and this figure is noted against the line The space above and below this central line represents a change of 1 volume % except in case 10, where an increase of 2 volumes % has been allowed for

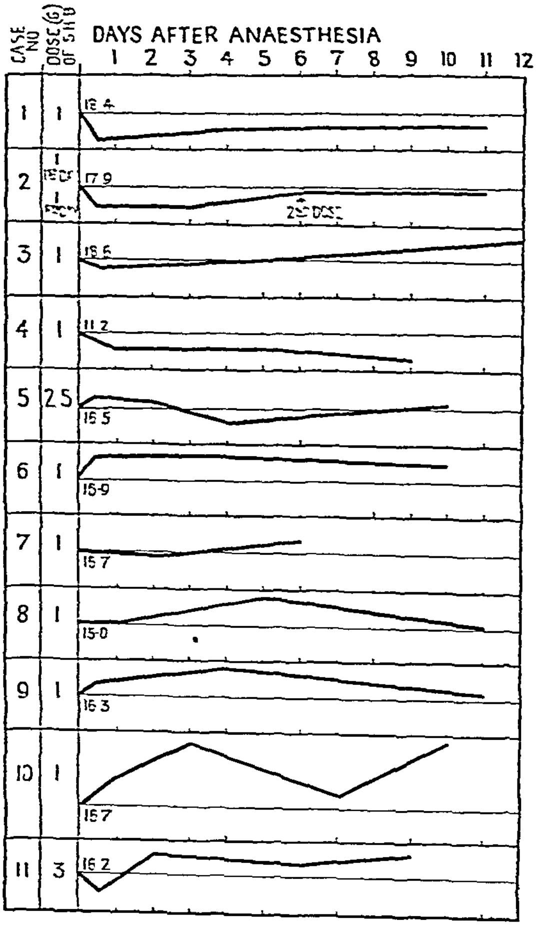
TABLE SHOWING RESULTS

No	Sex and age	Premedication (gr)	Supplementary anæsthetic	Dose of SHB (g)	Operation
1	M 48	M1/6, H1/150	Cyclopropane	1	Compound fracture
2	M 17	,, ,	Cyclopropane	1, 1	Lacerated hand.
3	M 29	None	None	1	None
4	M 28	M1/6, H1/150	Nit ox and E	1	Herniotomy
5	M 58	,	Nit ox and E	2	Bilateral herniotomy
6	M 17	, ,	Nit ox and E	1	Appendicectomy
7	M 35		Nit ox	1	Removal of epididymis
8	F 59		Nit ox and E	1	Herniotomy
9	M 61	,	Nit ox	1	Fractured olecranon
10	M 58		E	1	Herniotomy
11	M 35	,	Cyclopropane	3	Bilateral herniotomy

M = morphine Nit ox = nitrous oxide E = ether
H = hyoscine SHB = soluble hexobarbitone

It will be seen that in no case did the oxygen capacity fall as much as 1 volume %

Variations in blood-oxygen capacity may be associated with such factors as sleep, feeding, emotion, sweating, and the hæmoglobin content of the blood may vary by 10–15% from hour to hour (Wintrobe 1930) The small reduction in oxygen capacity noted in some of the cases reported here cannot therefore be regarded as significant, and it may be concluded that a serious fall in blood-oxygen capacity is not a common accompaniment of clinical soluble hexobarbitone anæsthesia in man



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[1] Part of this work was carried out during a temporary tenure of the Mayo fellowship in anæsthesia at the Royal Sussex County Hospital

TOXIC MANIFESTATIONS OF ANTISYPHILITIC THERAPY

FURTHER OBSERVATIONS ON CAPILLARY RESISTANCE

BY
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AND
HAROLD SCARBOROUGH, M B EDIN

(From the Department of Venereal Diseases and the Clinical Laboratories, Royal Infirmary, Edinburgh)

IN a previous communication (1940) we reported 1 case of toxic purpura and 9 cases of toxic erythema and dermatitis (1 showing spontaneous petechial bleeding) occurring during the course of antisyphilitic therapy with arsenic and bismuth All were found to have an associated low or decreased capillary resistance Scarborough and Stewart (1938) in demonstrating the effect of hesperidin (vitamin P) in the treatment of vascular purpura observed a decreased capillary resistance in 3 cases of purpura under similar circumstances

We report here a second series of cases investigated during the course of antisyphilitic therapy, including 9 cases of jaundice, 2 of which were associated with spontaneous petechial bleeding and 2 with erythema, and 2 cases of " vasodilator reaction " (nitritoid crisis) With the exception of 2 of the cases of jaundice, which were not considered to be clinical manifestations of intolerance, all the cases reported were associated with a low or decreased capillary resistance.

CASE-RECORDS

The capillary resistance was determined by a negative-pressure method and recorded as previously described (Horne and Scarborough 1940) The resistance is stated as the amount of suction in mm Hg required to produce a single petechial hæmorrhage in the area of skin under observation, one or more of three standard area being used, designated I, III and V

CASE 1 —Male, aged 53, with primary syphilis On March 22, 1940, three weeks after completion of the first " unit " course of treatment with arsenic and bismuth the patient reported with clinical jaundice A few spontaneous petechial hæmorrhages were observed on the limbs Fig 1 shows an associated decreased capillary resistance, which remained at this level despite clinical improvement Bismuth injections were started again on April 23 and numerous petechial hæmorrhages reappeared in association with a further fall in the capillary resistance No more injections were given, and the capillary resistance rose to a higher level

CASE 2 —Male, aged 26, with primary syphilis On April 9, 1940, during the second unit course of treatment, the patient reported with clinical jaundice The icteric index rose rapidly to 150, and gradually fell to normal Fig 2 shows an associated decreased capillary resistance, which rose as the clinical condition improved The chart also shows the occurrence of spontaneous petechial hæmorrhages during the period of low capillary resistance

CASE 3 —Male, aged 43, with primary syphilis On March 27, 1940, during the first unit course of treatment, the patient reported with erythema and clinical jaundice Previous determinations indicate that the intolerance was associated with a fall in the capillary resistance which rose as the clinical condition improved (fig 3)

CASE 4 —Male, aged 48, with secondary syphilis On July 12, 1940, during the first unit course of treatment the patient reported with an erythema No further injections were given and the erythema rapidly disappeared The patient reported with clinical jaundice on July 26 Fig 4 shows the associated decreased capillary resistance

CASE 5 —Male, age 33, with primary syphilis On June 7, 1940, three weeks after the completion of the first unit course of treatment, the patient reported with clinical jaundice The icteric index rose to 106 and had not returned to normal at the conclusion of the investigations Previous determinations indicate that the intolerance was associated with a fall in the capillary resistance (fig 5)

CASE 6 —Male, aged 28, with primary syphilis Intolerance developed during the second unit course of treatment, the patient reporting with clinical jaundice on April 2, 1940 Previous determinations indicate that the intolerance was associated with a fall in the capillary resistance which rose as the clinical conditions improved (fig 6)

CASE 7 —Male, aged 30, with latent syphilis On May 17, 1940, during the third course of treatment the patient reported with clinical jaundice Previous determinations indicate that the intolerance was associated with a fall in the capillary resistance which rose as the condition improved (fig 7)

CASE 8 —Male, aged 28, with secondary syphilis On April 30, 1940, during the second unit course of treatment the patient reported with clinical jaundice The history of prodromal gastric symptoms and chill suggested an infective rather than a toxic jaundice, and the clinical condition rapidly improved Fig 8 shows no lowering of the capillary resistance, and intravenous injections of arsenic were restarted on June 26 No intolerance developed during the remainder of the course, and the capillary resistance was maintained at a high level throughout

CASE 9 —Male, aged 26, with primary syphilis During the second unit course of treatment the patient reported on March 17, 1940, with clinical jaundice He was known to be a chronic alcoholic, and the jaundice, which was related to a bout of drinking, rapidly improved Fig 9 shows no lowering of the capillary resistance and intravenous injections of arsenic were restarted on April 9 No intolerance developed during the remainder of the course, and the capillary resistance was maintained at a high level throughout

In cases 8 and 9 the history and mildness of the attack led to the conclusion that the jaundice was not a true arsenical hepatitis, and this view was supported by the fact that resumption of treatment with the same dose of the same drug did not result in any recurrence of the jaundice, or in any other manifestation of intolerance

CASE 10 —Male, aged 31, with secondary syphilis A vasodilator reaction occurred on Feb 22, 1940, during the first unit course of treatment Fig 10 shows the associated fall in the capillary resistance No further intravenous injections of arsenic were given, and the capillary resistance returned to its original high level

CASE 11 —Male, aged 52, with latent syphilis and an allergic history A vasodilator reaction occurred immediately after an intravenous injection of arsenic on April 13, 1940 Fig 11 shows a persistently low capillary resistance

DISCUSSION

During the period January to July, 1940, 31 cases attending the male venereal diseases clinic at the Royal Infirmary, Edinburgh, who exhibited major toxic manifestations of antisyphilitic therapy were investigated Of these, 19 cases have already been reported (Horne and Scarborough 1940) and in addition 3 cases of toxic purpura previously reported by Scarborough and Stewart (1938) have received consideration, this group of 22 cases includes 4 cases of purpura (1 of which had associated jaundice and dermatitis), 9 cases of erythema and dermatitis (1 of which had associated spontaneous petechial bleeding), 7 cases of toxic jaundice (2 of which had associated spontaneous petechial bleeding, and 2 erythema), and 2 cases of vasodilator reaction The remaining 12 cases of the series of 31 have been investigated but not reported, they include 1 case of purpura, 7 cases of erythema and dermatitis (1 showing spontaneous petechial bleeding), and 4 cases of jaundice

In every case investigated we have found a low or decreased capillary resistance in association with the intolerance In addition, 2 cases are reported (bringing the whole series up to 33) in which jaundice developed during the course of antisyphilitic therapy but was not associated with any lowering of the capillary resistance In neither of these was the jaundice considered to be a toxic manifestation of antisyphilitic therapy In 10 of the 19 cases already reported determinations prior to the development of intolerance are available, and in each of them the capillary resistance has been shown to be decreased in association with the onset of intolerance

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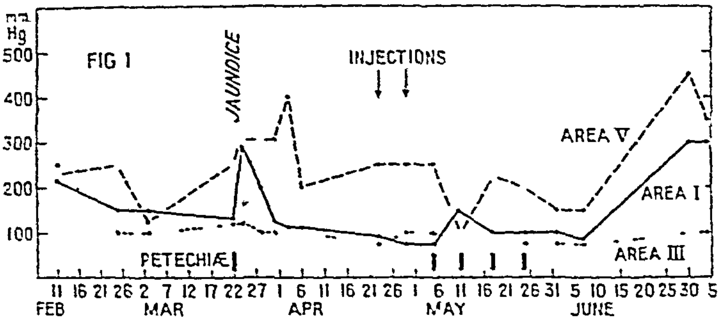
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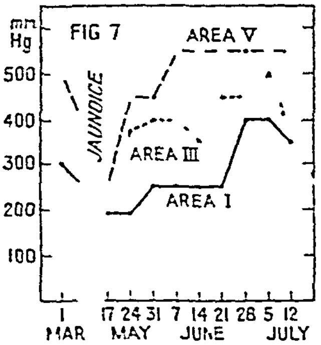
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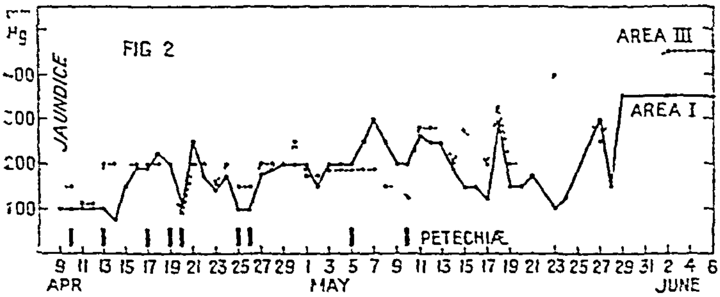
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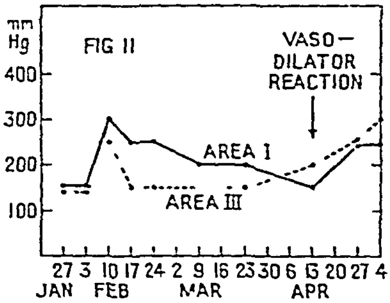
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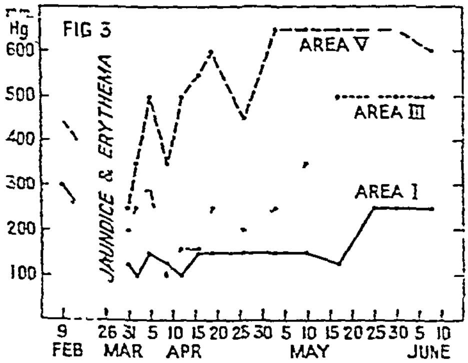
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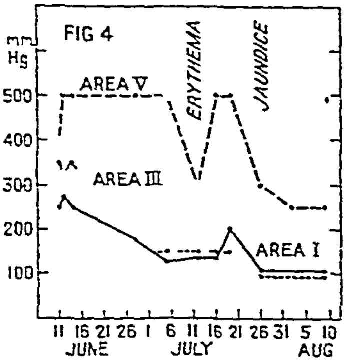
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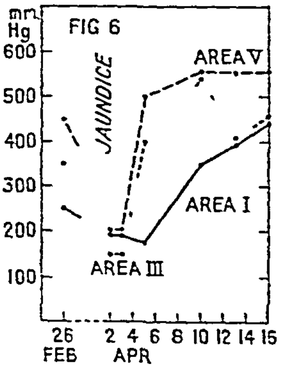
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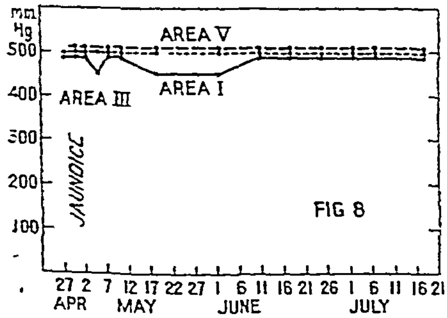
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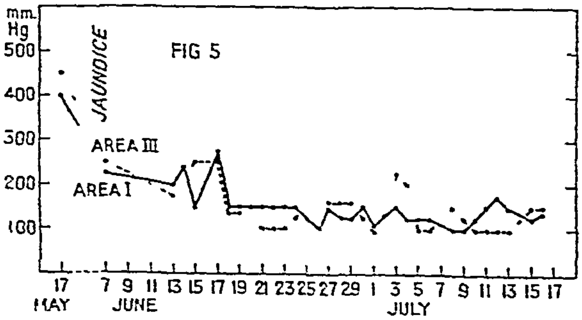
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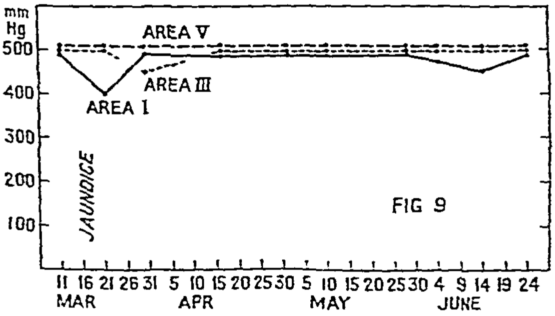
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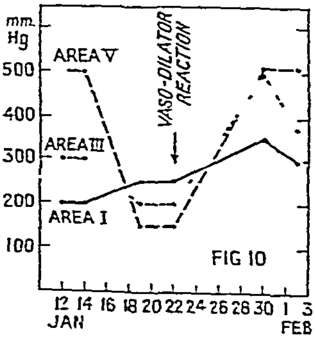
FIG 10

Ordinates are mm Hg suction.

In 5 of these cases, serial determinations are available and the onset of intolerance in each has been shown to be preceded by a falling, or persistently low, capillary resistance In 7 of the 12 cases investigated but not previously reported one or more previous determinations are available and the capillary resistance in each was found to be decreased In 3 of these serial readings show a fall preceding the onset of intolerance

CONCLUSIONS

Spontaneous petechial hæmorrhages are often associated with intolerance to antisyphilitic therapy

Toxic manifestations of antisyphilitic therapy are associated with a low or decreased capillary resistance

The lowering of the capillary resistance may precede the appearance of clinical signs and symptoms

These results suggest that the determination of capillary resistance might help to prevent the occurrence of intolerance during antisyphilitic and other forms of therapy with heavy metals

We acknowledge the facilities granted by Dr R C L Batchelor, director of the department of venereal diseases at the Royal Infirmary, Edinburgh

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THE PERCUTANEOUS TUBERCULIN TEST

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In 1938 I published the results of percutaneous tuberculin tests in a small series of children as compared with the intracutaneous (Mantoux) test The findings suggested that while the percutaneous method was perhaps slightly less sensitive than the intracutaneous its practical advantages outweighed its disadvantages As a result the technique was adopted of using the patch tuberculin test as a routine in children, and, if the reading was negative or doubtful, following it up with a Mantoux test 1/100 O T (1 mg) In this way the child was spared frequent intracutaneous injections, for at the most only one injection was given The Danish State Serum Institute " tuberkulinsalve " was used in most cases as this proved to be reliable and economical , the series of cases was brought prematurely to a close as the ointment is, of course, no longer procurable

Enough papers have now been published on the use of percutaneous tuberculin in children to prove that provided a strong and reliable tuberculin is used the test is an eminently satisfactory one from the point of view of both doctor and patient, particularly in contact schemes where large numbers of children of tuberculous families are tested (Monrad 1936, Wolff and Hurwitz 1937, Anzen 1935, Vollmer and Goldberger 1937, Court 1939, Pearce et al 1940) The use of a tuberculin test is essential in contact schemes and the ease with which a patch test is done makes it the method of choice in children We accordingly began to test adults and adolescents of different age-groups to find if the test was equally reliable in older age-groups Grut (1939), in the meantime, published figures in a small series of cases suggesting that although the test appeared to be less reliable in adults, comparison with the Mantoux test was favourable Of 270 Mantoux-positive adults " at most 6% " failed to react with the plaster method while in childhood only 3% failed to react Grant Taylor (1939) found the patch test slightly more sensitive than the Mantoux in young adults

SCHEME

The persons tested were all of hospital class and were all resident in or near London, though many came originally from Ireland, Scotland, Wales and elsewhere They were divided into the following groups —

1 Children aged 15 and under , 700 were tested * by three methods at the same time the Mantoux intradermal test, starting with a dilution of 1/10,000 and repeating if negative in dilutions of 1/1000 and 1/100 O T (that is, 0 01, 0 1 and 1 mg) , the Lederle (Vollmer) patch test , and the patch test using the Danish State Serum Institute's tuberkulinsalve The next 300 children received two tests only , if two tuberkulinsalve patch tests were negative a Mantoux test 1/100 (1 mg) was performed

2 Children aged 15 and under known to have a primary tuberculous focus or inactive tuberculous disease

3 Cases of quiescent pulmonary tuberculosis aged 16–50

4 Adults over the age of 59

In groups 2, 3, and 4 the tuberkulinsalve patch only was used, a second patch being applied if the first proved to be negative

5 A second group of adults over the age of 59 in whom the tuberkulinsalve test was checked by the Mantoux test

Mantoux test —Sufficient of the required dilution of O T was injected into the skin of the forearm to raise a weal 8 mm in diameter Two ink marks 8 mm apart were made with the point of a pen on the front of the forearm and the special short-bevel Mantoux needle inserted midway between To raise a standard 8 mm weal 0 1 c cm of the solution was usually necessary In this way size of weal raised and amount of O T injected were standardised as much as possible It was found that if 0 1 c cm failed to raise a standard weal some of the solution had escaped on or under the skin and the test was repeated in a fresh site The result was read in 48 hours, weal and erythema being measured and importance attached to the former A weal less than 10 mm in diameter was not accepted as positive (to be positive a weal had to be at least 2 mm greater in diameter than the original weal raised)

Lederle (Vollmer) patch test —This was used only in the first 700 cases in children and was then discarded in favour of the Danish preparation Patches were applied over front or back of the chest after cleansing the skin thoroughly with acetone and drying The patch was removed after 48 hours and read 24 hours later Positive reactions varied from a few papules or vesicles or both to a raised red area the size of the patch, with some desquamation in a few strongly positive cases

Tuberkulinsalve-patch test —The ointment is put up in 4 c cm tubes resembling small tooth-paste tubes Details of its manufacture are given by Jensen (1938) It is a mixture of purified tuberculin and old tuberculin (twice the strength of international standard tuberculin) absorbed in the ointment as a sponge, the ointment therefore having the same activity as the tuberculin itself This is as used by Monrad (1936) and is often known as the Monrad test An area of skin (free from hair) over forearm or chest was cleaned with acetone and dried , a bead of ointment the size of a split-pea was then squeezed on to a piece of ordinary adhesive tape 1 in square and the tape applied to the prepared area The amount used was reduced if a strongly positive reaction was expected One, or usually two, patches were applied, removed in 24 hours, and read after a further 48 hours Reactions were as with the Lederle test Plain squares of adhesive tape were used in most cases as controls but were abandoned in the later cases as they seemed to be unnecessary

RESULTS

A group of children under 16 years were tested by Mantoux 1/10,000 → 1/1000 → 1/100, Lederle and tuberkulinsalve-patch tests , 113 were Mantoux-positive, 587 Mantoux-negative All the negative reactions gave negative patch tests to both Lederle and tuberkulinsalve patches , 4 children who were positive to 1 mg O T intracutaneously failed to react to the tuberkulinsalve and 3 of these also failed to react to the Lederle patch , 4 failed to react to the Lederle and 3 of these failed with the tuberkulinsalve

A group of 300 children under 16 years were tested by two tuberkulinsalve patches and if negative by a 1/100 solution of O T intradermally (1 mg Mantoux) Of the

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* This group includes the 560 cases previously reported (*Lancet* 1938, 2, 609)

247 patch negative children only 4 gave positive intradermal tests, none of them severe

Of 114 children aged 15 and under known to be "tubercularised" but without active tuberculous disease 4 (3 5%) failed to react to the Danish tuberkulinsalve-patch test

Of 170 adults aged 16–50 with quiescent pulmonary tuberculosis 18 (7 6%) failed to react to two tuberkulinsalve-patch tests

Of 70 adults aged 60 or more, 14 failed to react to the tuberkulinsalve-patch test

Of 40 adults aged 60 or more, only 1 failed to give an intradermal positive reaction (1/10,000 → 1/1000 → 1/100) This subject and 3 others (Mantoux positive) failed to react to the tuberkulinsalve-patch test

DISCUSSION

These findings suggested that the older the skin the less reliable the percutaneous test became Even so, except in the old age-group the discrepancy was not very great, though great enough to make the result of doubtful value in adults and adolescents unless controlled by a final intracutaneous test Grant Taylor (1939) made the same observation as regards the old age-group, for 12 out of his 15 non-reactors (using the Lederle patch) were over 50 years, but he found actually more patch-positive than Mantoux-positive results in young adults students, and nurses He also found the test to be reliable in coloured patients One fact that emerged from our series was that doubtfully patch-positive reactions occurred in only a few cases which proved to be negative on a second test, false positives were on the whole conspicuous by their absence

In children the test appears to be eminently satisfactory The bad reputation earned by previous percutaneous tuberculin tests was due to the insufficiently strong tuberculin used Much ground has been covered since Moro, in 1907 published the results of his inunction method, and with the strengths of tuberculin now used inunction is not necessary—the plaster is applied but no friction is used Systemic reactions do not appear to occur (though I have my doubts about 2 cases which gave strong positive reactions accompanied by a slight rise in temperature) and patients are spared the needle to a great extent The material lasts several months (10 or more) if kept in a cool place and is, if the Danish material is used inexpensive (about a penny a patch)[*] The busy tuberculosis officer with a large contact scheme can relegate the actual testing to his nurse, who asks the mother to return with the children in three days for the tests to be read Many mothers who refused to have their children "injected" raised no objection to the patch test

It was found that a recently "tubercularised" subject usually gave a strong reaction to the percutaneous test, a fact noted previously with other methods of tuberculin testing A contact, previously tuberculin-negative, gave a decided reaction to his first positive patch in several cases In a few subjects the local reaction was so severe as to cause desquamation and a degree of discomfort, but, except in the 2 doubtful cases there was no systemic reaction. The difference in skin tuberculin-sensitivity using the percutaneous test in the different age-groups is interesting The older and the more dry and inelastic the skin the more unreliable the test appeared to become, the younger and more sensitive the more reliable Nevertheless, I obtained no definite impression about "reactive" and "non-reactive" types of skin, and the failures occurred in all types from the dark-skinned Indian to the fair-skinned blonde In a few cases the test appeared somewhat later than usual—possibly they displayed the "delayed skin sensitivity" suggested by Grut

SUMMARY

Percutaneous tests were performed on nearly 1400 subjects of different age-groups It appeared that the patch test (Lederle or Danish) gave a high degree of agreement with the Mantoux test under 16 years of age and became less reliable thereafter

The Danish State Serum Institute tuberkulinsalve was adopted as the patch test of choice

Percutaneous tuberculin tests appear unreliable in old age but to what extent is uncertain In adolescents and adults the test may be of use if checked by intradermal tests when the result of two patches is negative False positives appear to be very rare

Percutaneous (patch) tuberculin tests will be found to be of greatest use in contact schemes and in excluding tuberculous disease in childhood

My thanks for help and advice are due to Dr W E Lloyd and Dr Bernard Schlesinger

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[*] Patch tests available in this country are the Vollmer test (Lederle) and that of Evans Sons Lescher and Webb The Danish material is not at present obtainable

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ACUTE LUNG ABSCESS TREATED WITH M & B 693

By J S Richardson, M D Camb, M R C P
MAJOR R.A.M C, MEDICAL SPECIALIST AT A MILITARY HOSPITAL

SULPHANILAMIDE has not had an impressive record in the treatment of lung abscess, and Fisher and Finney[1] could find only 1 success for it out of 88 cases treated by various means Taylor, Yusuf and Chitkara,[2] however, treated 7 cases with M & B 693 with striking success in 3, all of whom had had symptoms for several weeks, 2 of the unsuccessful cases received negligible doses of the drug, but 1 admitted to hospital only three days after the onset of symptoms, died in spite of a total dosage of 40 g An annotation in THE LANCET (1940, 2, 337) pointed out that lack of success was to be expected because the presence of pus interfered with the action of sulphapyridine This suggested that the following case might be of interest

An officer in the R.A.M C, aged 26, was admitted to hospital on Oct 3, 1940 He complained of foul tasting sputum and general malaise, and had found that his temperature was raised at night His symptoms had been present for three days He had had the usual childish illnesses For some time he had had frequent attacks of tonsillitis and his tonsils were removed for this about a fortnight before his admission The operation was done under gas, oxygen and ether, with no premedication and his convalescence was uneventful until Sept 29 On the afternoon of that day he felt ill, shivering and having generalised aches Next day he went to a seaside resort still feeling unwell and two days later developed a pain in the right scapular region The following day he began to bring up blood-stained sputum which had an extremely foul taste On admission his temperature was 99° F, his pulse-rate 80 and his respirations 20 He looked ill. The condition of his fauces was satisfactory, his mouth clean and there was no fœtor His fingernails did not show any clubbing His chest showed a few crepitations at the right base and low pitched bronchial breathing at the right apex posteriorly, well out towards the upper end of the scapular spine His sputum contained small carneous lumps, slightly blood-stained, floating in a frothy mucopurulent fluid. It was not particularly putrid but the patient complained bitterly of the foulness of its taste With a view to combating this, an intravenous injection of an organic arsenical was given and the foul taste disappeared within twenty-four hours Microscopically the sputum showed neither tubercle bacilli nor Vincent's organisms, but a moderately profuse growth of *Streptococcus viridans* was grown. This was after sulphapyridine treatment had been begun A radiogram of the chest, taken on Oct 2, the day before admission, showed a thin-walled abscess at the apex of the right lung, well above the clavicle, with a fan-shaped

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1 Fisher, A. M and Finney, G G *Bull. Johns Hopk Hosp* 1940, 66 263

2 Taylor G F Yusuf, M and Chitkara N L *Lancet*, 1940, 2, 320

area of pneumonitis around it The abscess cavity was about ¾ in in diameter and contained a definite fluid level On another radiogram taken on the 4th the fluid level was higher but the surrounding area of density was the same as on the previous film The patient then began treatment with M & B 693, and this was continued for three days, during which time he had 18 g by mouth The blood count taken at this time was normal in all respects, but as the patient was suffering from considerable nausea, sulphanilamide was substituted for the next few days This was well tolerated and he had 11 g of it, making a total of 29 g of these drugs On the 12th another radiogram showed the area of pneumonitis to be smaller and no evidence of an abscess could be seen He was by this time extremely well His temperature settled within two days of beginning the sulphapyridine and all physical signs disappeared At the beginning of treatment his blood sedimentation rate by Payne's method was 27 mm at the end of an hour, but had fallen to within normal limits (6 mm) before he was discharged The patient's condition continued to be satisfactory, and on Oct 21 a radiogram showed normal lung fields, with no evidence of abnormality at the right apex He was discharged twenty two days after admission apparently completely cured

This patient was a doctor, who reported sick as soon as he noticed that his sputum tasted foul He was admitted to hospital immediately, and thus attention was rapidly drawn to his small acute abscess in its unusual situation at the extreme apex of the right upper lobe The success of sulphapyridine is not therefore beyond dispute in this case, for it might be argued that small acute lung abscesses are not rare so much as unrecognised, and may heal spontaneously The fact remains, however, that after the course of treatment the abscess and surrounding area of inflammation disappeared entirely within thirteen days

My thanks are due to the officer commanding the military hospital for permission to publish this case

Medical Societies

ROYAL SOCIETY OF MEDICINE

At a meeting of the Section of Neurology on March 19, with Prof GEOFFREY JEFFERSON in the chair, a discussion on

Fat-embolism

was opened by Dr A H T ROBB-SMITH He described fat-embolism as a condition in which fat, circulating as globules in the blood-stream, occludes capillaries and creates multiple foci of anoxæmia After tracing briefly the history of its discovery and experimental production he showed, from figures in his own series of autopsies performed on accident cases, that the condition is far commoner in this country than has been generally recognised He attributed the lack of recognition to the less systematic pathological examination of such cases here than on the Continent and in America Fat-embolism is usually due to gross trauma, and, from his experience, Dr Robb-Smith regards it as playing a significant part in the fatal outcome in 25% of cases, though this assessment cannot be other than arbitrary The extent of the trauma is important and fat-embolism is most frequent in association with multiple fractures, especially those involving long bones But the condition may also be found in cases in which the skull alone has been fractured or even where no fracture has occurred Thus it may complicate severe burns, though it is then usually slight in amount, and it may follow manipulations or the therapeutic injection of oily solutions It is a frequent complication of poisoning by ammonia and other alkalis

Dr Robb-Smith went on to discuss the controversial subject of the source of the fatty material and the means whereby it enters the circulation He considers that the history in most cases favours a local rather than a hæmic origin of the emboli He then described the clinical picture of pulmonary fat-embolism In a classical example there is an early stage of shock which, having been dissipated by treatment, is followed after a variable latent period by dyspnœa, cyanosis and pains in the limbs with a sense of thoracic constriction These signs and symptoms are accompanied by a rise of pulse-rate, respiration-rate, and temperature, but no fall in blood pressure Examination of the chest reveals a few ra but no signs of consolidation and there may be a littl frothy sputum These are the signs of acute pulmona œdema and the patient may die in this anoxæmic pha from right-heart failure Usually, however, the se of the symptoms diminishes, the respiration-rate high and signs of pneumonia develop In this stage a true pneumonic consolidation may result from a secondary infection No diagnostic aids give an unequivocal answer in connexion with pulmonary fat-embolism The morbid anatomy is distinctive when once it has become familiar , a useful test is to take a thin shaving of the lung tissue, clear it for a few minutes in 2% potash solution and then examine it under the microscope, when th emboli can be clearly distinguished as refractile dr and cylinders Symptoms of systemic fat-embolism develop a few days after the accident , they are characterised by a delirium which is often violent, alt with stupor and merging into coma , hyperpyrexia is the rule and petechiæ may appear in the skin of the neck, chest and arms Lumbar puncture shows no constant changes, though fat has been described as a constituent of the fluid Examination of the optic fundi may reveal segmentation by fat of the columns of red cells in the vessels and associated hæmorrhages Fat may also be demonstrated in the urine

Outlining the treatment of fat-embolism in general, Dr Robb-Smith recommended, on prophylactic grounds, that the immobilisation of fractures should be as complete as possible and that a tourniquet should be applied during manipulation and released slowly afterwards The administration of oxygen during the stage of pulmonary œdema is helpful and the subcutaneous injection of adrenaline should be tried Intravenous therapy is inadvisable at this stage Sodium desoxycholate has been tried on one patient, but although the pulmonary symptoms improved cerebral fat-embolism and death followed later Animal experiments are in progress with this substance and so far it appears to be harmful Dr Robb-Smith emphasised the need for a wider recognition of the clinical manifestations of fat-embolism , further study may thus lead to more rational forms of therapy

Dr DOROTHY RUSSELL outlined the clinical and pathological features of two cases of cerebral fat-embolism In the second of these a severe head injury, which had received effective surgical treatment, was associated with trauma elsewhere The diagnosis of fat-embolism in such cases may be very difficult In addition to the numerous foci of necrosis and hæmorrhage in both cerebral cortex and white matter associated with capillary fat-embolism, which have been widely recognised as characteristic features, Dr Russell drew attention to the great concentration of emboli in the choroid plexuses These had led, in both cases, to widespread degeneration of the epithelium and she suggested that the cerebrospinal fluid should be examined more critically for what might prove to be diagnostic changes A similar change in the plexuses has been observed by Fazekas in experimental fat-embolism produced by ammonium and sodium hydroxide poisoning An unusual feature in one case was a large anæmic infarct in an occipital lobe due to thrombosis of an adjacent meningeal artery

Dr J G GREENFIELD described a case of cerebral fat embolism in which hæmorrhages were not conspicuous in the brain although emboli were abundant The subcortical white matter showed numerous sharply defined perivascular areas of demyelination In the cortex these were represented by areas of necrosis which, again, presented rather definite borders

Mr A H HUNT pleaded for the wider recognition of fat-embolism in differential diagnosis The multiplicity and changeability of the initial signs and symptoms are characteristic of the condition He has observed recovery from cerebral fat-embolism in a man of 29 who, at an early stage of his illness, developed right hemiplegia and became comatose Bilateral exploratory craniotomy was performed, and on the fifth day petechiæ appeared in the skin and fat in the urine From the seventh day he began to improve and became mentally normal within a month Since then he has retained good intelligence and memory but sleeps little and has developed headache on resting

In the discussion that followed Dr ROBB-SMITH said that the fat in fat-embolism is probably derived from the traumatised areas but it is possible that fat is freed, at an early stage in subjects suffering from trauma, through the action of a lipoproteinase No anæsthetic was given in most of the examples forming his series but there is experimental evidence that the administration of ether diminishes the number of emboli When the ether was dispersed, however, more emboli appeared than in controls, so that this form of treatment cannot be advised as a prophylactic measure —Dr ERIC GARDNER noted that fat-embolism appears more frequently in the young than in the old; Dr ROBB-SMITH agreed, but he had found that fatal injuries are in general more common in the early decades —Dr D DENNY-BROWN asked for information about the time required for the development of changes in the myelin in these cases Examples have been reported in the literature as " delayed concussion " which were almost certainly due to fat-embolism He noted that petechial hæmorrhages are a feature of both conditions

LIVERPOOL MEDICAL INSTITUTION

AT a meeting of this institution on March 6, with Prof O HERBERT WILLIAMS, the president, in the chair, a discussion on

War Neuroses

was opened by Dr WILLIAM JOHNSON He said that in anticipation of cases occurring amongst civilians as a result of air-raids an E M S centre was opened in Liverpool early in the war Instructions were circulated by the group officer to first-aid posts and receiving hospitals with suggestions for dealing with patients in order to limit the number admitted to the centre As it turned out there was a dearth of civilian cases and not a single one has been admitted to the centre This experience is very similar to that in other centres After the evacuation of Dunkirk a group of military patients was admitted comprising types the same as those admitted to a centre in France during the battle of Passchendaele The majority of cases admitted to the centre in the past eighteen months have been soldiers who have not served outside this country Some were army misfits, others needed grading into lower categories, and some after treatment were fit to return to their units With regard to the latter a follow-up system is being carried out Those whom it was found necessary to board out of the Army were chiefly among the misfits, and men who had suffered from neuroses in civil life In the centre the *hospital* atmosphere is as far as possible excluded Very few patients are kept in bed, and a routine programme is in operation which ensures that patients are occupied through the day Physical-training instructors, occupational therapists, and instructors from among N C O patients have been appointed Carpentry, basket-work, raffia work, weaving, squad drill, route marches, games and talks on military subjects are contained in the programme It is important that military discipline shall be maintained in the centre

Dr F HOPKINS referred to the controversy which was waged in the medical journals some months ago on the subject of treatment in neurosis centres, and said that the real issue now is *whether* patients should be treated from the viewpoint of one particular school of medical psychology—the psycho-analytic—or by more flexible and practical methods of applied psychology The choice and carrying out of psychological treatment is important, but it is but one of the functions of the psychiatrist, diagnosis, prognosis and disposal was equally important, for only a relatively small proportion of cases require or are able to benefit by anything other than the more superficial kinds of treatment In every case admitted an estimate should be made of the optimum result possible before treatment is embarked on One of the most difficult problems is the disposal of the man who, though his disability may be slight, is unlikely to be a satisfactory soldier on account of personality type and attitude to service, but who might be an adequate civilian worker

Dr S BARTON HALL considered it important to determine as early as possible a man's fundamental attitude towards military service, as distinct from that outwardly expressed, since thereby much unnecessary effort, waste of therapeutic skill, inefficient service, and friction in the military machine, not to speak of expenditure of public money, could be saved In 150 consecutive cases of neurosis investigated, few of which were acute, the attitude towards service was at the outset found to be unsatisfactory in 78 Of these, only 2 could be rehabilitated to a degree sufficient to enable them to return to their units On the other hand, of 24 patients whose attitude towards service was found to be satisfactory 21 returned to their units with in many cases excellent prospect of rendering further useful service Among those whose attitude to service was unsatisfactory, a relatively high proportion were men, often over the age of 40, who had previously served in the Army, and even been invalided out and pensioned from it during the war of 1914–18 Of 33 soldiers referred for psychiatric investigation as outpatients, 11 were found to be mentally defective, though previously unascertained, and in 2 others intellectual development was so retarded as to incapacitate them for military training or service in any grade The anomaly in the examination of recruits thus revealed is of grave concern for the Army, and it reveals a serious defect both in the application of provisions for ascertainment of mental defect in the Education and Mental Deficiency Acts and also in the system of medical education whereby a board of medical men can pass men so handicapped as suitable for military service

Dr N S ALCOCK said that the essential in running a war-neurosis centre is the combination of physical and mental management In the initial interview the attitude of the patient is determined First it is decided whether he should be allowed to mix with the other men in the centre, or whether, as in hysterical patients, symptoms must be removed before he can join in the activities of the centre Secondly, occupation is discussed—what the man can do to help in the occupational programme and what type of occupation will most benefit him Lastly, he is allocated to his medical officer In running the centre every endeavour is made to make it approximate as nearly as possible to life in the units The part played by the N C O patients in running the occupational programme should be emphasised both for their own treatment and readjustment and also to get nearer the army life Patients should not spend too long in other hospitals before coming to the centre, or their previous hospitalisation will form a serious handicap to their fitting in with the running of the centre Unless there is a fairly close approximation between life in the centre and in the Army the adaptation the men make may be of little help when they return to the Army

Surgical Problems of War Casualties

In opening a discussion on surgical problems, Prof T P MCMURRAY said that the outstanding feature of the surgery of the present war, as compared with the last, is the almost complete disappearance of the ward dressing trolley and the ward gas apparatus The appalling pain caused by the daily or twice daily dressings has gone, and in its place is the modern technique of excision and fixation Fixation is almost always by plaster-of-paris, though in wounds of the thigh in fat women complete fixation by this means is extremely difficult An addition to the technique is the use of sulphanilamide by packs or in powdered form, or by insufflation on the surface of the wound Although sulphanilamide has helped to prevent sepsis in some cases which have not come for operation for 4–8 hours after the infliction of the wound, nothing can replace perfect excision of the wound, which is the essential point in treatment *It is criminal* to suggest that excision can be done badly so long as sulphanilamide is used The main problems met with now are shock, for which treatment is almost *standardised*, sepsis, the prevention of which depends largely on *excision* of infected and dead tissues and wide opening up of tissues which have become infected, and fractures of the pelvis, which have been common owing to the falling in of bombed houses In many cases of fractured pelvis there is a rupture of the urethra, and it would be well if agreement could be come to on the ideal treatment for this complication Are patients with a ruptured urethra to be treated with a catheter in position, or by suprapubic cystotomy, and what are the advantages of each? Professor McMurray warned those who apply plaster-of-paris without much experience that though this is a safe method of treatment so long as it is applied smoothly and without pressure, yet if skin-tight plaster is used on a limb the patient should not be transferred from the hospital for at least 48 hours During that time any abnormal point of pressure can be diagnosed and the pressure relieved, but if the patient is allowed to go home or to another hospital soon after the application of the plaster tragedies may happen

The PRESIDENT said that in rupture of the urethra it is necessary to differentiate between the intrapelvic and extrapelvic varieties In the former the urine escapes into the pelvic cellular tissue behind the triangular ligament, in the latter the escape is into the tissue of the perinæum in front of the triangular ligament It is the intrapelvic variety that occurs usually in fractured pelvis To establish the diagnosis of such a rupture it will be necessary to pass a catheter This should be done extremely gently, for more likely than not the tip of the instrument will pass through the rupture into the pelvic cellular tissue and this will tend to spread infection Even if the catheter does pass beyond the rupture into the bladder drainage will be inadequate, urine can still pass along the outside of the catheter and further infect the peri-urethral tissue Immediate suprapubic cystotomy and suction drainage is the rational line of treatment to follow in these cases

Mr F RONALD EDWARDS said that plasma is still not always being used in sufficient quantities, and a very rapid increase in blood-volume is necessary in severe cases of shock This can only be obtained by forced plasma administration with multiple cannulæ Oxygen therapy by the B L B, mask in shock is sadly neglected and this may turn the scale in a desperate case Desoxycorticosterone should be given a fuller clinical trial in shock There seems to be difference of opinion as to how and when to give sulphonamides in war injuries Certain wounds cannot be satisfactorily excised without producing a deformity out of all proportion to the original injury Many wounds come into close relation with important vessels and nerves which cannot be excised and are still potentially infected The sulphonamides seem to exert a definite inhibitory effect on anaerobic infection, and for this reason should be inserted into the primarily excised wound With wounds which are already grossly infected local sulphonamide tends to be washed away by the discharge, and it is then better to administer the drugs by mouth or intramuscularly, so that they will reach the organisms deep in the wounded area via the blood-stream If possible, estimations of the concentration in the blood should be done, a level of 10–15 mg per 100 c cm being maintained The incidence of gas gangrene is low—0 5% in the Liverpool area, with a fatality of 40% Tetanus has not been seen In perforating abdominal wounds, patients with involvement of solid viscera only as a rule do well, but in those with perforation of the alimentary canal submitted to operation the fatality is over 90% These patients die from shock not peritoneal infection, and further work is needed on the action of sulphonamides in the peritoneal cavity to stay infection, so that shock may be more efficiently treated before these people are operated on

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Reviews of Books

Practical Public Health Problems

By SIR WILLIAM SAVAGE, M D Lond, examiner in the Universities of London and Wales London J and A Churchill Pp 198 10s 6d

THIS practical guide to problems in general hygiene which confront every medical officer of health will be especially valuable to those recently appointed who find difficulty in practising in the field what they have learned in the books and the laboratory Sir William, from his great experience in the work of a medical officer, in research, and in the examination of candidates for diplomas, knows where failures in preventive medicine are likely to occur and in this book he tells us how to avoid them Especially good are the chapters on water, milk and investigations of food-poisoning outbreaks The book is concerned only with basic hygiene and makes no mention of school medicine, maternity and child welfare and other burdens which in recent times have been laid on the medical officer In the preface Sir William Savage calls himself "an old timer bred in the old tradition," but his book is completely up to date

Modern Medical Therapy in General Practice

Edited by DAVID PRESWICK BARR, M D, LL D, Busch professor of medicine, Washington University, physician in-chief, Barnes Hospital, St Louis London Baillière, Tindall and Cox Three vols Pp 3661 £9 12s 6d

TEXTBOOKS of therapeutics are apparently in the fashion This big one, which has 106 contributors, is designed for practitioners and covers "the non-surgical treatment of disease" The first volume deals with general therapy, including the use of drugs, vaccines, sera and physiotherapy, and ends with the treatment of deficiency diseases and diseases of metabolism and allergy The second volume opens with a section on infectious diseases and thereafter describes diseases of the different systems In any book of this wide scope and with so many contributors repetition is difficult to avoid, but here the editor has performed his task well Most of the sections are excellent and specialists as well as general practitioners will find the book a source of authoritative information The general index, an important part of a book of this kind, is comprehensive and occupies nearly 100 pages

A Short Practice of Surgery

(5th ed) By HAMILTON BAILEY, F R C S, and R J MCNEILL LOVE, M S, F R C S London H K Lewis Pp 1016 30s

THE additions and alterations to this work are mainly minor Many of the contributions to surgical knowledge within the last two years which are of established value have been included, chemotherapy being given, as it deserves, an important but not too prominent a place As in earlier editions more importance has been attached to pictorial than to verbal stimuli, and a large number of new illustrations have been added, though some have been retained which might well have been discarded The historical footnotes which first appeared in the last edition have been multiplied, flavouring pleasantly the routine of study The chapters on genito-urinary surgery remain very good indeed, and those on the abdomen, mouth, neck and breast are also well done Although other sections—notably those dealing with fractures and general surgical pathology—do not reach this level, the book as a whole will certainly maintain its popularity with undergraduates

Speech Training for the Deaf Child

By SYLVIA M MARTIN, associate of the British Society of Speech Therapists London George Allen and Unwin Pp 114 5s

IN war the physically disabled are apt to be neglected, but there is always someone who has their well-being in mind Miss Martin has written this book to guide intelligent parents in the speech-training of their deaf children It was needed in peace-time when deaf-mute clinics for preschool children were few and far between, still more is it needed now when social organisation is more difficult The book is presented in concise and clear form The general advice and particular instructions encourage the parent to proceed step by step to a final success Not only is speech aimed at but normal speech with pure vowel and consonant discrimination and normal inflection The gradation of exercises is admirably arranged for this purpose At the same time they are simple and with patience can easily be carried out The consultant, the general practitioner, and the speech therapist may justly recommend this book Its use will allay an attitude of hopelessness in the parent and prevent the wastage of the early years for training purposes

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by Fall's advice, that progestin be used prophylactically to guard against abortion in expectant mothers who must make long journeys, who suffer severe mental shock occasioned by the receipt of bad news, etc., or who are the victim of febrile disease, in which the hyperpyrexia might induce an obstetrical accident Ill Med J, 76, 507, 1940.

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THE LANCET

LONDON: SATURDAY, MARCH 29, 1941

THE PREVENTION OF GAS GANGRENE

THE cause of gas gangrene is, as OGILVIE[1] has remarked, a particular opportunity rather than a particular organism. It requires first, an infected soil (the infecting anaerobes are often present on soiled clothing); secondly, a deep wound of muscle (rarely areolar tissue as in the retroperitoneum) usually caused by bomb or shell splinters; and thirdly a time interval of 12–24 hours between wounding and surgical treatment, although fulminating cases may develop within a few hours of injury. The first two requisites are generally accepted but it is not so widely recognised that time as a factor in establishing infection is probably more important in gas gangrene than in any other disease. The patient's life may depend on his being surgically attended within 12–24 hours of wounding. Wherever there has been delay in the treatment of war wounds gas gangrene has become a prevalent infection, an experience dearly won in the 1914–18 war. With air-raid casualties there should theoretically be little delay in treatment, but various circumstances may combine to interfere with adequate surgical attention within the safe period, and in fact clinical gas gangrene has been cropping up in a number of hospitals dealing with civilian casualties; rates of 0·5 and 2·7% have been quoted but the incidence depends a good deal on the nature and severity of the casualties. If it is granted that early surgical débridement, admittedly the best prophylactic if properly carried out, is not always possible, other available methods for the prevention of gas gangrene must be used. Because gas-forming anaerobes kill by the toxins they produce, gas-gangrene antitoxin might reasonably be considered the prophylactic of choice. Yet it has never become popular; indeed, in the early period of this war an official circular forbade its use prophylactically for air-raid casualties. Surgeons found they could dispense with it in civil practice, and TRUETA'S experience with air-raid casualties and other war wounds in the Spanish civil war—1 case of gas gangrene among over 1000 patients—strengthened opinion against its use. Some go further and say that as a prophylactic gas-gangrene antitoxin is ineffective, although it is difficult to find on what grounds this view is based. Only one large-scale experiment on the prophylactic use of *Cl. welchii* antitoxin has been recorded, and the findings were on the whole favourable. In France in 1918 alternate divisions were issued with either ordinary antitetanic serum or this with the addition of a low-titre *Cl. welchii* antitoxin, and one or the other was given as a prophylactic to all the wounded. The results were as shown in the following table:[2]

To quote ADRIAN STOKES: "The experiment demonstrates what would naturally be expected, that the number of cases occurring in the casualty clearing stations was not influenced and that the incidence at the base was probably diminished. The period between the administration of the prophylactic serum and the recording of the presence of gangrene at a casualty clearing station would often be a matter of only a few hours, and also those cases which had been lying out, or whose evacuation had been delayed owing to military conditions, and in whom the gangrenous process had probably begun at the time of the injection of the serum, are included in the C.C.S. records. On the other hand, the mortality in cases arising in base hospitals was reduced by about 50%. It must also be remembered that only one of the pathogenic organisms was prophylactically dealt with in this series." On the experimental side there is abundant evidence, supported anew by Dr. GORDON and Professor McLEOD in this issue, that antitoxin is effective when used prophylactically. If it is given some hours after infection the results are less uniform, being as a rule better in infections with *Cl. welchii* than with *Cl. septique*, which may be due to the fact that *Cl. welchii* is more toxigenic than invasive, whereas *Cl. septique* is both toxigenic and invasive and therefore less amenable to the action of an antitoxic serum. Infection with *Cl. œdematiens* (*novyi*), which is mostly toxigenic, should be readily prevented by the specific antitoxin.

—	No. of men	Cases of gangrene	Deaths	Morbidity per 1000	Fatality (%)
Front area—					
A.T.S. & W.*	9484	119	26	12·54	21·84
A.T.S.†	13,303	156	38	11·72	24·35
At the base—					
A.T.S. & W.	15,740	43	5	2·73	11·62
A.T.S.	23,792	92	21	3·86	22·62

* A.T.S. & W. = antitetanic serum plus antitoxin for *Cl. welchii*
† A.T.S. = ordinary antitetanic serum

The advent of this war gave a fresh impetus to research on the prevention and treatment of experimental gas gangrene with the sulphonamide drugs which had already worked miracles in other infections. Early investigations, though encouraging, were mostly carried out on animals infected intraperitoneally and thus did not closely resemble the natural infection. When injected intramuscularly, the gas-forming anaerobes produced infection which was unaffected by sulphanilamide and only partially prevented by sulphapyridine when these drugs were given by mouth, intramuscularly or intraperitoneally. They had no therapeutic value in established infections. Since then there have been two valuable additions to the armoury—sulphathiazole, and the local application of sulphonamides to the injured and infected muscle. In the test-tube sulphathiazole seems to be superior to the other sulphonamides in its action against gas-forming anaerobes, and it has the advantage over sulphapyridine of greater solubility, which allows a higher concentration in the wound-fluids when applied locally. Allowing for differences in technique—the methods used by McINTOSH and SELBIE[3] and by REED and ORR[4] closely resemble the natural infection—the evidence from recent investigations indicates that sulphathiazole is the most generally effective as a prophylactic, that local application gives better results than administration by any other route, that used locally sulphanilamide is better than sulphapyridine, and that in themselves these drugs have hardly any curative value, with the possible exception of locally applied sulphathiazole On the basis of these results, HAWKING[5] has recommended a mixture of sulphanilamide and sulphathiazole in the proportions of 2 to 1 for local application as soon as possible after wounding The amount of drug recommended for local use has usually been 5–15 g, but in view of the low blood-levels found clinically after such doses and the relatively big doses required to prevent experimental infection, larger amounts, say 20–30 g, could probably be safely applied, although too little is yet known about the effect of these drugs on the shocked patient

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[1] Ogilvie, W. H. Wound Infection. Lancet War Primer. London 1940, p. 68.
[2] History of the Great War, Medical Services, Pathology. London 1923, p. 95.
[3] McIntosh, J., and Selbie, F. R. *Lancet*, Feb. 22, 1941, p. 240.
[4] Reed, G. B., and Orr, J. H. *Ibid*, March 22, 1941, p. 376.

One difficulty with local chemoprophylaxis is that it is usually not attempted until the patient is being dealt with surgically, by which time gas gangrene may be in its incipient stage and beyond drug control The insufflation of a sulphonamide powder should be supervised by a surgeon and as a rule must be done under anæsthesia, in a shocked patient resuscitation must come first Gas-gangrene antitoxin, on the other hand, can readily be given intramuscularly along with tetanus antitoxin as soon as the patient is attended medically If this is done, as it should be whenever there is a deep injury of muscle, it may not always prevent local gangrenous infection, but at least the surgeon will be able later to do the toilet of the wound on a non-toxic patient In this war, as in the last, incipient gas gangrene has been misdiagnosed as persistent shock, and operation delayed till it was too late A point which GORDON and MCLEOD mention—and which was stressed in THE LANCET War Primer on Wound Infection (p 25)—is that much larger doses of antitoxin than are ordinarily prescribed will be needed to combat an infection already begun but not detected clinically A local barrage of antitoxin has been suggested when infection is present or suspected, but the intravenous route is likely to be most effective for antitoxin used therapeutically For the declared case, a combination of drug and serum[6] will be the most effective supplement to surgical treatment and may lead to more conservative surgery And, if the results of treatment are to be accurately assessed, every surgeon must learn to distinguish wounds infected with anaerobes from true gas gangrene,[7] in which there is an invasion of tissues not already damaged, with death and putrefaction of previously healthy tissue

PRESUMPTION OF DEATH

IN the Probate Court last week the President granted leave to swear the death of Mr Alphonse Abrahams, a diamond broker, as having occurred last September when he was in a shelter which was bombed Mr Abrahams, it was proved, had permission to shelter in the basement of a clinic adjoining his flat, he had undressed, put his belongings on a table and inflated a rubber mattress After the explosion (which seriously damaged the basement) his wallet and fragments of the mattress were found but there was no trace of Mr Abrahams Soon after the President's decision was reported a widow wrote a letter to a newspaper to complain that, her husband having volunteered for civil defence work as an A R P stretcher-bearer and his depot having been bombed last September, she had to wait three months for the certificate of presumption of death and was still waiting for her widow's pension His body had not been recovered Unhappily there will be many of these distressing cases, and, while the assistance authorities are known to be doing their best to relieve immediate needs, there is bound to be some delay Defence Regulation 30A, just published, will help A coroner will be able to hold a private inquiry, without a jury, where a body is believed to have been destroyed by enemy action He will issue a certificate to that effect, and the registrar will then issue his certificate in the usual way

Peace-time provisions for presuming death are naturally inadequate in present conditions Ordinarily in civil, as in criminal, proceedings there has been a cautionary rule that it is unsafe to accept the fact of death without the finding and identification of the dead body There was in England no common-law or statutory limit to the presumption of the continuance of life, but the analogy of the criminal law of bigamy introduced a presumption of death after a period of seven years' absence After the seven-year period the courts could look back in order to see whether death could reasonably be presumed to have occurred earlier, there was no presumption that death occurred on the last day of the period For the purpose of granting probate the court has never insisted on waiting seven years if the missing person disappeared in circumstances which raised a strong possibility of death—for instance, if a ship had gone to sea and never reached port In recent years there has been a greater readiness to deal with presumption of death by statute In 1925 it was enacted that henceforth, where two persons died in circumstances which made it uncertain which of them survived the other, the younger would be deemed to have outlived the older Under the Herbert Act in 1937 it became possible for a married person, alleging the existence of reasonable grounds for supposing the death of the other party to the marriage, to petition the court for a decree of presumption of death and dissolution of the marriage In this connexion seven years' absence is prima-facie evidence of death if the petitioner has no reason to believe that the other party has been living within that time

The tragedies of the war have created fresh problems, and there must be legal safeguards still where rights and property are affected Trustees, for instance, cannot be expected to act upon statements which may turn out to be unfounded Soon after war began, Parliament passed the Execution of Trusts (Emergency Provisions) Act Nobody is to be deemed (for the purpose of that act) to have actual notice of any other person's death by reason only of a report that the other person is missing, or "missing, believed killed," unless the death has been presumed by order of a competent court and the person in question has notice of the order The new defence regulation seems to allow coroners to usurp the functions of the High Court

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[5] Hawking, F *Brit med J* Feb 22, 1941, p 263

[6] Henderson, D W and Gorer, P A *J Hyg Camb* 1940, 40, 345

[7] Mullally, G T *Lancet* March 1, 1941, p 269

HALLUCINATIONS

LITERARY descriptions of hallucinations are plentiful not only in the archives of mental hospitals but also in accounts of religious or "psychic" experiences and in the autobiographies of poets and scientists Many writers on this subject—which lends itself readily to philosophical treatment—have found confirmation of their special theories among the abundant material Others, distrusting all observations but their own, have tried to gain information at the source by questioning and examining hallucinated patients But the reports of such patients are not often satisfactory, judgment and memory seem to be impaired during the hallucinatory phase as they are in the normal dreaming sleeper, and descriptive ability is rarely adequate Owing to the vagueness and indifference of verbal descriptions, one school has concluded that hallucinations are not in any way specific that they are merely vivid images identical with the mental mages of any normal person, important and significant to the patient only because of his disturbed mental condition This school puts emphasis on the psychological background rather neglecting the sensory element in the hallucination Others suspect that unsatisfactory descriptions may be a natural outcome of the strange appearance presented by many hallucinations which—according to this theory—differ so much from the real world to which our language is adapted that words prove inadequate to describe them, and patients, even after recovering their critical faculties, form new words or use comparisons which are difficult to understand

The strangeness of hallucinations, and the unreliability of polished literary witnesses, have been largely confirmed since the discovery of mescaline, the active principle of a plant used by Mexican Indians for many centuries in their religious ceremonials By injecting mescaline it is possible to change a person, for a few hours, into a hallucinated psychotic There is no danger of addiction, as with opium or hashish, and the few after-effects of the experiments are slight The application of these artificial psychoses to the study of psychological medicine is far from being exhausted Mescaline hallucinations are predominantly, but not exclusively, visual, consciousness remains relatively clear throughout a great part of the intoxication Nevertheless, even trained observers find difficulty in giving a description of what they have experienced, and complain of lack of suitable expressions MACLAY and GUTTMANN[1] gave the drug to artists and asked them to sketch what they saw and to make other drawings in retrospect It is striking that many of the peculiarities of the drawings thus obtained can be explained in terms of sensory physiology Fretwork patterns resembling the choroid capillaries, tapestry picturing the retinal artery and its branches, patterns similar to coloured scotomas or the fortification patterns seen by patients with migraine—these seem to point to a peripheral origin of mescaline hallucinations Other pictures illustrate the development of hallucinations with definite shape and content out of repetitive photomas or vivid after-images, a symptom also experienced by patients suffering from lesions of the occipital cortex The useful sensory deception that things around us are still and constant in shape can break down under mescaline, nothing stands still, everything fluctuates in some phases of the intoxication and in others the faculty to see actual movement is suspended Visual perceptions as well as hallucinations seem to change their shape incessantly for instance, when attention is directed on a special point the hallucinated figure seems to elongate itself in that direction

Mescaline intoxication thus supports the school which lays emphasis on the sensory peculiarities of hallucinations On some people it makes a deep and lasting impression, especially on artistic subjects who speak of the experience as opening up new access to the visible world This is of interest to those who like to speculate about primitive powers of sensory perceptions which may have been sacrificed to abstract thinking during human evolution Hallucinations of poets philosophers and religious ecstatics are, according to this view, produced by regression to a more primitive, but not necessarily less efficient, mode of experiencing[2] However that may be, the vividness of the experience explains the original use of the drug for religious purposes and throws light on the attitude of many psychiatric patients towards their hallucinations

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MEDICAL CARE OF WOMEN IN THE FORCES

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[1] Maclay, W. S., and Guttmann, E. *Arch. Neurol. Psychiat.* January, 1941, p. 130

[2] McCowan, P. K. *Brit. med. J.* 1939, 2, 631

SKIN LINES AND HAIR TRENDS

THE lines of the skin were studied in considerable detail in the middle of last century by Simon[1] and Langer,[2] and were beautifully and fully described by Erasmus Wilson in his "Diseases of the Skin" They are usually known as Langer's lines The deep lines or creases are found over joints and other parts which move, and mark the more fixed points They are produced by bands of fibrous tissue running from the skin to the deeper structures and prevent the skin from slipping about like a loose glove J Grayson[3] has recently studied these cutaneous ligaments on the lateral aspects of the human (and animal) digits He finds that in addition to the bands of fibrous tissue dorsal to the vessels, running from the phalanges to the skin opposite the interphalangeal joints, as described by Cleland as long ago as 1867, other retinacula can be dissected volar to the vessels, running from the flexor sheaths to the skin These particular retinacula do not produce skin creases because in this particular situation the skin does not become folded upon itself in flexion and yet does not move in relation to the deeper structures Finer lines can be seen with the naked eye running in some instances transversely, in some longitudinally These are due to the peculiar disposition of the fibrous and elastic tissue in the corium The finest lines can be seen with a hand lens, and divide the skin into a series of tiny triangles, fitting together like a beautiful mosaic They are well seen on the back of the hands and webs, and are produced by the finer movements of the skin The skin lines are remarkably constant from individual to individual, though their minor variations produce the cult of palmistry and the science of fingerprint detection Wood Jones[4] calls them tension lines, a good term which indicates their importance to the surgeon An incision along these lines will heal with the minimum of scarring, whereas one made across them will not only gape when made but produce a wide scar when healed Oblique incisions illustrate the effect of elastic pull, by the tendency of one side of the wound to slide relative to the other, a point that has to be noted in suturing The result of ignoring the skin lines can easily be studied on the abdomen, where incisions are made at all angles, *more in relation to the direction of the muscle-fibres* underneath

The distribution of the human hair and its direction has also been studied by Erasmus Wilson and many others since The main arrangement of the hair on the trunk is based on a whorl in each axilla, from which the hair streams up towards the head and neck, down the arm, down across the chest and abdomen, and down the legs In the midline of the body (front and back) lines of convergence are thus produced, and in other situations lines of divergence Wood Jones has drawn a chart of hair distribution which differs in some respects from Erasmus Wilson's description The hair on the head is based on a whorl in the occipital region (sometimes double) and a whorl at the medial end of each eyebrow Bolk[5] has studied the distribution of the hair on t forehead and head of the human fœtus and finds that t hair patterns are innumerable, a fact which can readil be checked by observing differences in individuals as see them From these observations it is probable despite a general conformity to plan the hair streams the human body show much greater individual v than the skin lines, and Wood Jones makes it clear th there is no relation between them Various th have been propounded to explain the distribution of human hair, but none has met with general accep Direction is given to the hair by the obliquity with whi the hair follicle is set in the skin This may be thoug to be of little moment to the surgeon, but is of importance when whole thickness skin is to transplanted from one part of the body to the othe particularly on the face in the region of the eyebrow and eyelashes

RAPIDLY DEVELOPING SILICOSIS

IN most industries where silicosis is encountered, characteristic feature of the disease is the slowness w which it develops It is "insidious in onset, of g chronicity, occurring amongst workers who are e for years to the inhalation of siliceous dust"[6] contrast with this well-known picture is the silicosis abrasive soap workers, and certain men engaged in crushing of quartz and sand-blasting Where the centration of fine dust in the air is very high, and the inhaled particles are almost pure silica, a fibrosis may develop rapidly and even be fatal in short a period as a few months This form of the dis has been referred to as "acute silicosis," but it *a little inappropriate to describe as acute a cond* which takes at least several months to develop more accurate though perhaps cumbersome t "rapidly developing silicosis" was adopted by 1938 Silicosis Conference of the International Lab Office The total number of cases recorded is large , Ritterhoff[7] has lately reviewed them and adde two new ones, both from the abrasive soap industry Macdonald and others[8] reported the first two in this country in 1930 , Middleton[9] described 14 i 1936 These all occurred among young girls empl in a soap factory in Wales Pulmonary tuber appeared to be a complicating factor in 12 (proven in of them In the United States Chapman[10] des 3 and Kilgore[11] 6 cases, most of them fatal In abrasive soap industry finely ground silica is mixed powdered soap and alkali, and the view has repeat been advanced that the presence of the alkali h the toxic effect of the silica by increasing its solubility This view seems unnecessary, if not unlikely, because the occurrence of rapidly developing silicosis w there is no admixture of alkali with the dust Sand blasters working in poorly ventilated places—e g , th recently described case of McNally,[12] tunnel workers s as those in the Johannesburg sewers and at Gau Bridge in America[13]—may contract silicosis with all th classical features of the disease becoming apparent in very few years or even months Gardner believes that the "acuteness of the reaction is logically explained on high concentrations of fine free silica"

The lungs of workers dying from rapidly developing silicosis, or from some intervening infection, often show no gross appearance suggestive of silicosis , nodules are not seen on the pleural surface or on the cut surface, t microscopic examination reveals numerous minute icotic nodules The smallness of these nodules obably explains the fact that X-ray plates of the chests these workers may fail to reveal the typical shadows silicosis A not infrequent finding is the interesting metastatic silicotic nodules" of the spleen These e held by Ritterhoff to be foci of macrophages and ot typical nodules, but Belt[14] finds that they are histogically characteristic of silicosis They are small, ear and discrete, admirably suited to minute analysis, hereas lung lesions may be coarse and conglomerate hey show clearly, in fact, all the characteristic features the highly distinctive lesion of silicosis The cure for pidly developing silicosis is in the hands of the engineer dequate measures for the suppression of dust should, nd indeed have in many instances, brought the condition nder control Whereas it is difficult to bring the dust oncentrations in mines down to a non-dangerous level, is comparatively easy to suck away the dust rising om a process over which a man works in a stationary osition or to encase a man in a positive-pressure mask o that he breathes only air which is supplied from utside his dusty environment The admirable measures nstituted by the Factory Department of the Home Office ave done much in this country to make "acute ilicosis" a distressing medical memory of the past

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[1] Simon, O *Die Localisation der Hautkrankheiten*, Berlin, 1873
[2] Langer, K *S B. Akad Wiss Wien*, 1862, Part I, p 43 , Part II, p 45
[3] Grayson, J *J Anat Lond* January, 1941, p 164
[4] Wood Jones, F *Ibid*, p 248
[5] Bolk, L *Ibid*, 1921 58 206
[6] King, E J and Belt, T H *Physiol Rev* 1938, 18, 347
[7] Ritterhoff R J *Amer Rev Tuberc* January, 1941, p 117
[8] Macdonald, G , Piggot, A P and Gilder, F W *Lancet*, 1930, 2, 846
[9] Middleton, E L *Ibid*, 1936, 2, 1
[10] Chapman E M *J Amer med Ass* 1932, 98, 1439
[11] Kilgore, E S *Ibid*, 1932, 99 1414
[12] McNally, W D *J industr Hyg* January, 1941, p 45
[13] Gardner, L U *Amer J publ Hlth*, 1933, 23, 1240

MALARIA IN THE ARMY IN INDIA

As a cause of illness in the Army in India in 1939 nalaria has not only maintained the first place but has omewhat increased its incidence over that of a year earlier[15] For this increase the war was at least in part responsible by necessitating movements of troops, their early return from the hills and their distribution, outside established cantonments, in security posts, indeed that last factor in some instances gave 100% incidence in the autumn In cantonments antimalarial measures have been carried on with skill, enthusiasm and success, but on the other side of cantonment boundaries the story is different Within cantonments the "dry day," on which possible mosquito breeding places are emptied, is now accepted Men do not grumble at the trouble but at the wind which may carry-in mosquitoes from outside This emptying excludes water stocked with gambusia—local fish which, by feeding on mosquito larvæ, effect the same object well and with less trouble Sprays made from pyrethrum flowers imported from Kenya have proved valuable for attack on the adult insect, and the plants are now being grown in Cashmere and in India itself Although malaria is still the greatest cause of illness in the Army in India, in the last 15 years its incidence among British troops has fallen in Rawalpindi from 473 to 41 and in Lahore from 2245 to 392—9 out of 10 infections avoided

THE FOCAL ORIGIN OF MAMMARY CANCER

EXPERIMENTAL research into the nature and causes of cancer is making such rapid progress that current medical teaching on this subject perpetually needs review In the medical schools it is still commonly taught that cancer of the breast arises in a single focus, and surgeons base their treatment on this assumption The correctness of this practice cannot be doubted, but the assumption on which it is founded lies open to question on academic grounds Experiments have shown that œstrogens play a leading part in the causation of mammary cancer, and that in a susceptible animal a single cancer may develop although the agent has been carried to all parts of the breasts in the blood-stream The normal as well as the pathological reactions to an œstrogen often vary in degree in different parts of a single mamma—for example, if a mouse has been subjected to a continued excess of œstrogen, the various successive changes culminating in cancer may all be present simultaneously in different parts of the same breast Such local inequalities of response are seen in other organs which react to œstrogen The appearance of mammary cancer at a single point, therefore, cannot be used to disprove its dependence on such a generally distributed agent as an ovarian hormone circulating in the blood On the other hand, if this ætiology is accepted, we might expect the occasional occurrence of mammary cancer in more than one focus at the same time In mice, cancer of the breast, whether spontaneous or artificially induced by œstrogen, is often of multifocal origin, and more than one mamma may be the seat of a primary tumour In considering this fact one has to remember that the mammary system is much more extensive, relatively to the rest of the body, in the mouse than in woman In women separate and grossly distinct primary cancers growing simultaneously in both breasts or in different parts of the same breast are rare, though not unknown Another form of multifocal mammary cancer seems to be more frequent in women, that in which separate ducts or acini, within the same region of a mamma diffusely affected with precancerous changes, become the sites of malignant growth In this sense the occasional multicentric origin of cancer in women seems established Such an observation is not new, but fresh attention is drawn to the subject in a paper by Sir Robert Muir[1] on the evolution of mammary cancer, in which the occurrence of multifocal cancer is lucidly described and exemplified He also points out that a malignant change may affect diffusely the cells of one region of the mamma, in such a case the cancer may be described as regional rather than focal The implications of his remarks will doubtless have an influence on medical teaching, so that the student will be taught to regard the focal origin of mammary cancer not as a scientific fact but merely as an approximation to reality and as a gross but serviceable guide to the operator.

IS POLIOMYELITIS WATER-BORNE?

KNOWLEDGE of the epidemiology of poliomyelitis has advanced a long way from the time when the disease was regarded as a spontaneous atrophy of the anterior horn cells of the spinal cord But even after the infectious nature of the disease was proved, inquiry about the mode of spread was greatly restricted because the monkey was the only animal found susceptible to experimental infection, and case-to case spread was extremely rare However, with the help of the neutralisation test which demonstrated antibodies in a high proportion of urban communities, it became obvious that latent infection must be very common and that spread was presumably taking place by means of healthy carriers or abortive cases Indeed, accumulated data showed many similarities between poliomyelitis and diseases spread by direct contact or droplet infection but with this contrast, that whereas, in measles for example, 99% are clinically and 1% latently infected, the ratios are reversed in poliomyelitis But it is not all plain sailing Outbreaks occur which are strictly localised to one district and do not follow lines of human traffic, cases crop up simultaneously in a district without any apparent opportunity for spread by a human carrier and, most puzzling of all, whether it breaks out in England, America, Scandinavia or the Antipodes, poliomyelitis always shows a late summer or autumnal epidemic wave Add to that the gastro-intestinal upset which often ushers in the clinical disease, and the evidence of systemic infection with involvement of mesenteric glands, and it becomes difficult to say whether poliomyelitis should be grouped with the respiratory or the intestinal infections

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[14] Belt T H *J Path Bact* 1939 44 39

[15] Annual Report on the Health of the Army in India for the Year 1939 New Delhi

[1] *J Path Bact* 1941, 52, 155

It has been known for some years that the virus of the disease could be recovered from the fæces of clinical case and healthy carrier, and that it may persist in the intestine for weeks or months after an acute infection The virus has also been recovered from sewage and in one unconfirmed instance by Kling from drinking-water[1] Following up their earlier work and using the technique they devised—intraperitoneal injection into monkeys of the etherised supernatant layer—Paul and Trask[2] have shown that the virus can be recovered from the stools not only of clinical cases but from patients with mild infections which could not otherwise be confirmed as poliomyelitis Furthermore, from a study of an outbreak in rural Connecticut, they concluded that the spread was connected with a particular river, and river epidemics in Sweden and Germany have been described by Kling Paul and Trask, therefore, carried out extensive tests for the virus in sewage From 66 samples, of which 13 gave unsatisfactory results, they isolated the virus at least 6 times, representing four samples of sewage from two different sites, one of which was the sewer pipe of an isolation hospital where cases of the disease were being nursed Two other points were established (1) that the total content of the virus in sewage may be large, and in this connexion they record in a footnote that monkeys can be infected by nasal instillation of unetherised fæces , and (2) that the virus is stable enough to be carried in sewage for at least an eighth of a mile From these findings Paul and Trask are cautious in drawing any conclusions They agree that there seems good evidence for the spread of poliomyelitis by direct contact, but they think there may be other channels including contaminated food, milk and water, and they direct attention particularly to the part which polluted watercourses may play in spreading the infection The epidemiological puzzle of poliomyelitis is still far from being solved, but perhaps we are beginning to find an explanation for its unusual seasonal distribution

MORE FAMILY BUDGETS

CONTINUING its analysis of the weekly budgets collected in 1937–38 the Ministry of Labour now gives a picture of the expenditure of the average agricultural worker, dietary studies of whom have been far less frequent than of his urban counterpart[3] The average size of the 1491 families contributing to the study is, rather unexpectedly, virtually the same as in the industrial households previously reported[4]—namely, 3 79 against 3 77 Their mean weekly expenditure is, however, substantially less, 57*s* 4*d* as compared with 85*s* The cost of housing in rural districts (rent, rates, water charges, &c) is naturally lower, 4*s* 9*d* per week against 10*s* 10*d* , though whether effectively less in relation to the amenities the family obtains for it is another matter —for instance, the urban household spends 2*s* 5½*d* a week on gas and electricity and the rural only 7½*d* , for they cannot spend on what is not there On clothing and footwear the average rural expenditure is 5*s* 3*d* a week, the urban 8*s* 1*d* , the former has the obvious advantage of a smaller expenditure on travelling and, as the returns show, the more doubtful advantages of a lower outlay on tobacco, newspapers, entertainments and doctors A greater proportion of the income has, of course, to go to food on which the average rural family spends 27*s* 9*d* , or 48% of the total, against the urban family's 34*s* 1*d* , or 40% The comparison, however, excludes allowances of food from employers or grown by the household, and this clearly much reduces the value of the comparisons one would like to make between urb and rural diets For example, from an early study the diets of rural workers in Essex,[5] Bradford Hill c cluded that at that date (1923) the rural diet was sufficient, though it compared favourably in respects with urban diets of families with larger incom owing to the home produce It was, however, varied, with a substantially smaller amount of meat considerably more bread and flour The Ministry Labour's budgets show the same tendency, but differences are narrow For instance, the av agricultural household spent 4*s* 2*d* weekly on bread ar flour and the industrial household 3*s* 6¼*d* , on me (including poultry, rabbits, bacon, ham, &c) the spent 7*s* 2*d* and the latter 8*s* 1¼*d* , while the figures sugar are 1*s* 3½*d* rural and 1*s* 0½*d* urban The items of food provided by employers are milk, and (in Scotland) oatmeal, while home produce mainly in potatoes, cabbages, and eggs, all impor items in a good diet From the figures available should be possible to build up a broad between the diets of the urban and rural groups, even though it be not complete it would be of interest

TERMINOLOGICAL EXACTITUDE

SPEECH, that late acquirement of the tool animal, has little precision as yet Even our most statements convey but a rough meaning, and scien terms—especially psychological terms—have often many interpretations as interpreters Some day speech may become as exact as mathematics , and in attempt, perhaps, to hasten that good time the injuries committee of the Medical Research Council hav published a glossary of psychological terms common used in head injury Their aim has been to greater uniformity in case notes and the definitions out are already in use at the special centres for the tre ment of head-injuries , if they were generally adopted the medical services the clinician attending a tran patient would derive an accurate idea of his state his notes Only sixteen terms are defined semicoma, confusion and delirium , traumatic and automatism , concussion , traumatic demen intellectual impairment and personality disorder malingering and hysteria , insight, judgment and co prehension , and amnesia The committee point that the definitions are arbitrary and may not universally acceptable, but rightly insist that to avo further ambiguity they should be accepted and After all, it matters little what a word means provided all agree on its meaning If we need new terms we always invent them neologisms are not the prero of the insane The other M R C committees might follow suit by defining their own terms, and in the we may get what we badly need—a good English glossa of scientific terms There are some excellent Am dictionaries, but they show troublesome divergences spelling and sense from accepted standards over h There would be an all-round gain if English scientific people could speak and write the same languag and a joint Anglo American committee on terminol is needed to bridge the gaps

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SIR WILLIAM SMYLY died at his home in co Dublin March 19 at the age of 90 Born and bred in the medica tradition and one of the pioneer obstetricians he p a leading rôle in Irish medical life a generation ago Master of the Rotunda Hospital 1889–96 he becam president of nearly every group of gynæcologists in th Empire, and finally president of the Royal College Physicians of Ireland His writings are to be found all the systems of medicine of the period

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[1] See *Lancet*, 1939, 2, 753

[2] Paul, J R and Trask, J D *J Amer med Ass* Feb 8, 1941, p 493

[3] *Ministry of Labour Gazette*, January 1941, p 7

[4] *Lancet*, 1941, 1, 119 The two *Gazette* articles have now been separately reprinted H M Stat Off 3*d* each

[5] *J Hyg* , *Camb* 1925, 24, 189

Special Articles

MEDICINE AND THE LAW

Judicial Views of Medical Evidence

WHO shall decide asks Pope in an often-quoted line when doctors disagree? The disagreement of medical experts in the witness-box is often matter for judicial comment. But judges also disagree. In particular it seems, they differ about the value of the personal evidence of doctors. If Mr Justice Macnaughten be correctly reported, he declared last week that he had never yet come across an accident case where the evidence of a doctor in person was of any assistance at all though doctors' reports were generally most helpful. He was being asked to fix a day for a trial in which there would be a great deal of medical evidence. He refused to do so and he warned counsel that if it were found that the doctors' evidence could have been put in the form of reports costs might not be awarded even to a successful litigant. "It is a sheer waste of money and valuable time" he said "to bring doctors to court."

Against what is possibly an over-simplification of judicial experience, let us put the dicta of the Court of Appeal, delivered a few days earlier in the case of Proctor v. Peebles (Papermakers) Ltd. A young man had his hand crushed in the rollers of a machine. When sued for damages, the employers did not dispute their liability but they challenged the plaintiff's estimate of his injury. There had been the usual preliminary skirmishing before the case came on at the Lancaster assizes on a summons for directions to decide the lines on which the trial should proceed it had been ordered that the parties should agree the medical reports. At the trial Mr Justice Croom-Johnson commented unfavourably on the calling of a medical witness on behalf of the plaintiff in view of the projected arrangement that the medical evidence should be agreed. The Court of Appeal while somewhat vaguely anxious not to discourage preliminary agreement upon medical questions, announced that directions for agreed medical evidence should not be ordered as a matter of form. In Proctor's case said Lord Justice du Parcq, where prognosis was important the production of merely paper evidence was inappropriate. "It was most desirable that a doctor should be present in court to answer the questions which a judge might wish to ask, if for no other reason." It was very unfortunate added Lord Justice MacKinnon that a judge should deprecate the calling of a doctor in such a case, as it was often of the greatest advantage that the doctor should be present in order to explain what he had reported and to undergo cross-examination. In Proctor's case the doctor who was called on behalf of the plaintiff had stated his opinion that the injury to the young man's hand was permanent and without remedy. In the view of the Court of Appeal the trial judge ignored this uncontroverted evidence and substituted some opinion of his own. The plaintiff appealed on the ground of the inadequacy of the damages awarded to him. His appeal succeeded. Mr Justice Croom-Johnson had given him £550, the Court of Appeal increased this sum to over £1200.

It is not for doctors to decide when judges disagree. The medical witness will doubtless be grateful for any reform which saves him from wasting valuable time in the precincts of a court. Probably, too, he is conscious that the system which brings medical experts before a judge as members of opposing teams sometimes produces an unedifying spectacle. If he belongs to the plaintiff's side, he has come there to give evidence for the plaintiff, his sympathies have been enlisted by that side from the beginning; he has his reasons for his views; he wants to see those views upheld. If he is on the defendant's side, and especially if he be in the habit of giving evidence for defendants, sentiment will be out of place and scepticism in the matter of subjective symptoms will be inevitable and appropriate. Sometimes it is true the experts on both sides may meet in conference beforehand. But the reasoned convictions which they have come to court to support are not to be lightly abandoned after a few minutes' conversation. Nobody suggests that the medical witnesses are acting in bad faith, but they are identified with the side which invites their aid. We must expect the plaintiff's witness to assert that the injury is due to the accident and that the sequelæ are serious and permanent. We must expect the defendant's witness to maintain that the injury, if any, is unrelated to the accident, that it is greatly exaggerated and that anyhow, it will soon get right of itself. The authority of the law may direct the opposing teams to meet in consultation but it can no more procure agreement between witnesses than between the parties themselves. For years reformers have been advocating a greater use of medical assessors to relieve judges of the troublesome business of deciding medical issues. But the law is reluctant to surrender its jurisdiction. It is also, as so often appears in criminal trials where the irresponsibility of the insane is in dispute extremely suspicious of the intrusion of medical upon legal standards. The ideal tribunal perhaps would be the judge who is fully trained both in law and in medicine; but a strong legal element in the body which made recommendations a few years ago about the coroner's office deprecated any dual qualification and seemed to consider that only the barrister or solicitor untainted by any medical training could be trusted to hold an inquest. The law is for the lawyers unless perhaps the litigant is entitled to express his view. Courts after all, exist in order that plaintiffs may bring claims. Will the plaintiff still have perfect confidence in the course of justice if he is told that his medical witnesses must behind his back cobble up some compromise with the defendant's witnesses upon the matters of fact and opinion on which his case is founded?

TREATMENT OF BURNS

NOTES on the local treatment of burns, based on recommendations of the coördinating team on burns appointed by the war wounds committee of the Medical Research Council have been distributed by the Ministry of Health for the guidance of medical officers in E.M.S. hospitals and first-aid posts. The recommendations are as follows.

AT FIRST-AID POSTS

Minor burns which do not require admission to hospital should, after cleansing the surface with plenty of soap and water be dressed in the following way.

In the case of the face or hands, with gauze or lint impregnated with sterilised Vaseline.

To prepare sterilised vaseline dressings, half fill a biscuit tin with vaseline, stand the tin in a deep dish of water which is brought to boiling-point on a stove or fire. When the vaseline is melted, drop into it pieces of gauze or lint about 6 in. square, folded into two, until the tin is full. Add more vaseline if necessary to cover the dressings. Leave the tin in the boiling water for half an hour. Then remove, put on the lid and seal with a strip of strapping.

In other parts of the body, with tannic-acid jelly or gentian violet jelly, 1%. If jellies are used no dressing should be applied over the burnt area and clothing must not be allowed to come into contact with the burn area until the coagulum has formed and is dry. The application of tannic-acid or other coagulant jelly to the surface of a burn which has not been adequately cleansed is inadvisable.

Serious burns requiring admission to hospital should be treated by the application of sterile vaseline on gauze or lint to cover the exposed portions of the burn. It is hoped that in the near future a non-greasy substitute will be available for use instead of vaseline. Provided the patient is shortly to be transferred to a nearby hospital, no attempt should be made to remove clothing in order to expose the entire burn area. Serious burns always require injections of morphine for pain, in full doses (gr ⅓–½ for adults).

AT HOSPITAL

At the first hospital where the case can be fully treated the following lines of local treatment are advised for extensive burns of whatever degree.

Under gas and oxygen or Pentothal anæsthesia, the burn areas should be thoroughly cleansed by the gentle but liberal use of soap and water, followed by saline and by the removal of debris under strict aseptic precautions (soft soap should

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SIR WILLIAM SMYLY died at his home in co Dublin on March 19 at the age of 90 Born and bred in the medical tradition and one of the pioneer obstetricians he played a leading rôle in Irish medical life a generation ago Master of the Rotunda Hospital 1889–96 he became president of nearly every group of gynæcologists in the Empire, and finally president of the Royal College of Physicians of Ireland His writings are to be found in all the systems of medicine of the period t everyone also recognises that certain people in tain circumstances are so ‘difficult’ that they ome ill as a result. This is undoubtedly happening a large scale now and neuropsychiatry is coming into own and developing a rapidly expanding vocabulary is clearly desirable that the unfortunate neurotic uld not be allowed to think that he has an organic ease or injury, and the abandonment of the label hell shock” formerly pinned on him is an excellent ve. It is also reasonable that only those doctors o possess the necessary amount of patience should l with them. Presumably all neuropsychiatrists ve this amount (one would like to forget the few one ows have not) and are therefore the best men for the But I can only wonder what else this spate of pers means. Perhaps the writers are themselves acting with abnormal violence to their changed ironment—or do neuropsychiatrists never do this?

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[1] See *Lancet* 1939, **2**, 753

[2] Paul, J R and Trask, J D *J Amer med Ass* Feb 8, 1941, p 493

[3] *Ministry of Labour Gazette*, January 1941, p 7

[4] *Lancet*, 1941, **1**, 119 The two *Gazette* articles have now been separately reprinted H M Stat Off 3d each

[5] *J Hyg, Camb* 1925, **24**, 189

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Returning to the analogy to the second law of motion, e ability to hold on to the changed direction and locity might serve as a definition of “guts.” Naturally person exhibiting this is aware of his altered condition d neither welcomes it nor is indifferent to it. He cepts the situation and having accepted it produces internal stimuli of disruption and resists any external es. The longer the changed circumstances continue e greater the degree of staying power, stamina or guts.” Explosive disruptive influences from within e most likely to occur in either the very poorly or the ghly civilised groups. In the former a mass phenomenon ily readily appears interrupting the activity of e moment. In the latter, where the ability of intellectual perception is well cultivated, the individual is sceptible to influences of change because he possesses critical faculty and is able to appreciate the several spects of any problem. Ordinarily the term panic is sed to describe the former reaction; the latter is more omplex and is difficult to label in a word. But on these rms the disruption of the Polish and French peoples this war is understandable, and that of the Russians nd Germans in the last. On these terms too will be ttled the present conflict of the British and German aces and their plans for the future welfare of the ilised world. It is thus important to provide conditions which will prolong our own ability to continue long our present course. Therefore it is essential hile inducing an acceptance of the present temporary nditions in the minds of the majority to see that this s firmly based on ideas and emotions which connote omething more permanent for, being (we hope) a highly ilised people we may be given unnecessary scope for he exercise of our critical faculty. Actually this should ot be difficult, for our opponents have from this point f view behaved in a grotesquely stupid manner, and ave themselves provided many stimuli which would ormally keep us firmly on our changed course in pposition to them. The history of the last year has hown that our propaganda folk are rather lacking imagination in the use of this material. In fact, there has been a noticeable tendency to avoid any statement which in any way touches on essential sociological ideas, and it is hardly unpatriotic to note that there are many who are disturbed by this (to them) fundamental omission. These people naturally include a number of the more intelligent and trained minds, and they require for their stability in new and difficult conditions more than has as yet been vouchsafed. Our own profession is an excellent example. Never in any two years since the dawn of civilised medicine has so much been thought, written and read about the practice of the profession and the organisation of its future services. This corresponds politically with war aims and the executive direction of the war. The secret formation and the composition of the Medical Planning Commission came to many doctors with the same shock that the recent banning of certain artists by the B B C came to many of the lay population. A conflict is recognisable which can be the origin of disruptive forces.

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There are many individuals who have had the curiosity (or intellectual activity) to study social trends and events of the last few years, who consequently believe that drastic modifications in the conditions of existence are necessary, but who lack the inner explosiveness to alter their own course or velocity. An easy label—intelligentsia or highbrow—can be pinned on these folk, but their position is readily understood, because their lives are generally untouched, or at any rate only very lightly touched by the passage of events. Just occasionally their material existence is improved by the war. It should be different where people are forcibly deflected from their paths, especially when this is suddenly and violently performed. Some degree of disorientation would be expected. I was surprised to find that among my new associates this form of vertigo was surprisingly absent. Moreover, they were largely unconscious that they had undergone an experience which might have resulted in instability; they had suffered a change of direction but no alteration in velocity. This cannot be accepted simply as a natural phenomenon and dismissed from the mind. There must be reasons for such behaviour. The book of Job supplies one—faith. A number, although I suspect a small one, are religiously convinced of the justice of the cause. Others of us are convinced of the ability and honesty of our new leaders. But presumably a similar emotion activates the German people. Dynamically it is a stable condition only if the leaders really possess this ability and honesty. Religion is an extroversion of an internal emotion, and as such is generally unshaken until replaced by some even more powerful emotion. It is a universally distributed attitude of mind. The demand for leadership is also pretty universal, but is a less powerful instinct because it depends on demonstrable qualities such as ability and honesty. Fluctuations of price on the pre-war Stock Exchange readily demonstrate how unstable this emotion can be. Its foundations are inherently insecure and perhaps not enough attention has been given to this fact by those responsible for the direction of our war-time activities.

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Whatever my lot may be after this war one job I will never take on is that of a billeting officer. Even on a small scale it has caused me more worry and inconvenience than seemed humanly possible. It was probably asking for trouble to try to plant my particular brand of “billetees,” medical students, on my particular brand of “billeters,” middle-aged or elderly inhabitants of suburbia transported to the Home Counties. The problem of how to begin was met by persuading my wife to ask a friend whether she knew of any of her friends who would like to have a particularly nice type of medical student as a billetee. Aided by the fortunate coincidence of an influx of official evacuees from London, the response was overwhelming. Even a medical student was considered preferable to the unknown quality of official evacuees, and in the end my main trouble was explaining to importunate potential billeters, always on the telephone, that there really was a limit to the number of students we could supply in any one area, but (and this proviso was the only way, I found, of ending the conversation) should by any chance any further students arrive I would be only too pleased to let the lady have them. The story, however, was very different at the beginning of the next term when a fresh batch of men had to be accommodated. In the interval the official billeting problem had become much less acute. This time it was either a blank refusal, or the billeter had been ordered a rest by her doctor, or the domestic servant problem had become hopelessly acute. So the search had to be begun all over again and fresh fields sought where medical students and their ways were still unknown. Inquiries, usually carried out surreptitiously by my wife, as to how the students behaved produced the startling reply that they were not “house-trained.” In my low mind this phenomenon was associated with the alvine habits of infants and dogs, but here it included habits of leaving clothes all over the bedroom floor and using hair grease which spoilt the pillow-cases. The most indignant of all the landladies complained that her lad from the north, having been invited to partake of his host’s beer at dinner on his first night, took it for granted that he would have the same privilege every night. Why a lady of some fifty years did not take the obvious step of pointing out the error of his ways at once instead of storing up her indignation for a term and then letting it loose on my unfortunate wife I have never been able to make out. It has all been an not be used, the best application is some form of soap flakes) No violent scrubbing or scraping should be used, nor should antiseptic solutions or spirit be employed If the burn area is impregnated with oil or grease, ether soap is of value for cleansing Extensive burns should never be fully exposed at one time, owing to the risk of increasing shock by loss of body heat a limited area only should be exposed for treatment which should be completed before the next area is dealt with Loss of heat is especially marked when ether soap is used After the cleansing process has been completed, the burn surface and the skin around should be dried and the burn surface should be lightly dusted with sulphanilamide powder, a coagulant is then applied except in the areas mentioned below

Coagulant applications—The following solutions are the most suitable as they act quickly and require no special apparatus silver nitrate, 10%, tannic acid 10%, silver nitrate, 10% and tannic acid, 5%, used alternately, triple dye (one formula in common use is equal parts of gentian violet, 1 in 400, brilliant green, 1 in 400, and neutral acriflavine, 1 in 1000)

The application is best made by the use of a large gauze mop, no dressings are required over the coagulated area, but it is advisable to cover the part with a sterile towel after the coagulum is dry The edges of the area and any cracks that may develop on the surface should be dusted daily with sulphanilamide powder In whatever way coagulation is effected the coagulum must cover the whole area and a good margin of unaffected skin around, and must be firm and dry or, else the effect of the treatment is lost as the patient will still lose fluid from the burn area

No coagulant of any kind should be used on the face the hands and wrists, and the feet Circumferential tanning of a limb should be avoided if possible, and if carried out the peripheral pulse must be carefully watched for the first 48 hours Coagulants tend to contract on drying, and there is a risk of dangerous constriction of vessels or distortion of tissues (e g, the fingers and eyelids) as this occurs In addition to the solutions given above, tannic-acid jelly and gentian violet jelly are coagulants

Treatment of burns in areas which should not be tanned—After cleansing, the surface of the burn area is dried and dusted with sulphanilamide powder A tulle gras dressing is then applied, and this in turn is covered by 6–8 layers of gauze wrung out in warm normal saline The gauze must be kept moist by warm saline being dripped on it from time to time, and on no account must it be allowed to become dry The tulle gras will enable the gauze dressings to be removed without causing pain or injury to the burn surface, provided they are kept moist, as a rule it is advisable for the first few days to change the gauze every 3–4 hours, the tulle gras being left undisturbed during this process Twice a day at first, and subsequently, according to the progress of the case, once a day, the tulle gras dressing is changed, where it is possible to immerse the affected part in a bath, the tulle gras dressing is allowed to float off, which it does readily In the case of the face or other parts for which a bath cannot be used, a gentle stream of saline greatly assists in the removal which should be painless and not associated with bleeding Where baths are used the limb can remain immersed for half an hour or more, the saline being kept warm throughout Before applying a fresh dressing the unburned surface of the limb is dried, and the burn area dusted with sulphanilamide powder

Tulle gras, originally a French preparation, may be prepared in the following way Curtain net, with a mesh of 2 mm, is cut into pieces 9 cm square, these are placed in a tin box of slightly larger size The box is then filled with a mixture containing soft paraffin, 96 g, balsam of Peru, 2 g, sufficient being used to impregnate and cover the material completely after sterilisation by heat in an autoclave The French preparation contained also halibut oil, but the value of this when applied locally is doubtful, and it can be omitted

Dressings must be carried out with full aseptic technique, and special care must be taken to ensure the surgical cleanliness of the arm and leg baths An oil silk or jaconet bag or cover is of value in keeping the gauze moist in the case of the arms and legs, both while the patient is in bed and during transport Where burns of the face are treated by saline packs, a jaconet bib assists in keeping the patient and the bed dry It is made as follows

Take a piece of stout wire and bend it into an oval about 14 in in its long diameter and about 8 in in its short diameter A piece of jaconet is then cut, of sufficient size to form a deep basin when its edges are sewn to the wire hoop Towards one end of the jaconet basin cut a hole large enough to go over the patient's head, the edges of this hole should be turned over and sewn so that a tape can be threaded through the channel so formed On tightening the tape the opening can be made to fit round the neck At the other end of the basin a small hole is made into which a tube for drainage can be tied

All cases of severe burns likely to be followed by loss of function or disfigurement, or to require extensive grafting, should be transferred to a burn centre as soon as they are fit to travel

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In England Now

A Running Commentary by Peripatetic Correspondents

AN abrupt translation in my existence recently occurred and I found myself in an entirely strange and remote part of the country, living and working with a fresh group of people In London it is so customary to hear free discussion of the war, of changes in social conditions caused by it, of motives guiding the events leading up to it, that I became conscious of a gap in mental activity when I found that nothing of this sort happened in my new company I thought it odd that my associates, most of whom were middle-aged (many had served in the last war), were so uninterested in the reasons for their changed circumstances and for the sudden transition in their lives It would seem no light matter to relinquish tasks on which one has been engaged for years, a home one has painstakingly constructed for a family diligently nurtured, and to find oneself doing something entirely different in scope and aims in the company of strangers equally quaintly employed In many cases, as I have mentioned, this was happening for the second time In Newton's laws of motion is the postulate that matter moves in a straight line with uniform velocity until acted upon by some external force when it changes either its velocity or its direction and often both Man seems to answer to the same mathematical theorem and seems generally to show as little inclination to effect any alteration in his new properties This might be due to indifference or even a welcome to the changed circumstances It is the fashion nowadays, as every medical periodical is a witness, to ascribe people's reactions—their resistance to change of velocity and direction—to psychological conflicts and inability or ability to overcome them All these learned articles boil down to the original Kraepelinian postulates that abnormal behaviour is merely an exaggeration of a normal behaviour response, and is not a different response Each psychiatrist or psychoanalyst says that as a result of his study of x cases of mental disturbance or breakdown he has found that each case has over-reacted to his changed circumstances along lines which could be foretold from a previous study of his past behaviour Vulgarly, so what? Surely it is a commonplace that we each as individuals react in a similar way to similar stimuli—any poker player would tell a psychologist this! And it is not very clear where these learnedly written articles with their queer technique of verbal description are leading us They all seem to end in the same way, rather vaguely saying that appropriate treatment in highly trained surroundings is sometimes successful—and sometimes isn't Anyhow, by definition, there is no reason why these patients should be "cured" as they are merely being themselves I also cannot make out why it is necessary always to stress that the staff are highly trained merely because they are able to be reasonably patient and intelligent with neurotic men and women, and, since optimistic suggestion should be part of the treatment of any case, why is it always necessary to state that the staff must be highly trained before they can possess this piece of ordinary nursing technique? Surely sympathy, a good ordinary word to describe such an attitude towards the sick, is an essential quality of all who practise medicine or nursing It is a matter of common knowledge, lay and medical, that certain people are "difficult" when they are ill, and I think abnormal times it was impossible to adopt the recommendations of Lord Perry's Committee The chief recommendation was that the margin allowed for the distribution of milk should be drastically curtailed in the interests of the consumer The average consumption of milk was one gallon a family each week, and this would mean a saving to each family of *4d* a week In spite of war conditions the milk trade had rendered good public service sometimes at a financial loss, and they had produced considerable evidence that they would find it impossible to continue business under the margins suggested by the Perry Report Lord WOOLTON warned the country it would be difficult to maintain our milk production at its present level Under the National Milk Scheme introduced last July 10,000,000 gallons were distributed to 2,800,000 people About a third received the milk free and the others paid *2d* per pint He hoped to maintain an unrestricted supply to nursing and expectant mothers and young children, and to maintain supplies to hospitals and invalids But he must use the balance of our milk-supplies for the greatest need of the nation, and he had decided to restrict the consumption of milk by the ordinary man and woman He was asking dairymen to reduce their domestic sales from the middle of April by a seventh The milk saved would be used to increase the production of cheese and condensed milk, which we should certainly need next winter Bakers and flour confectioners would have to dispense with use of milk, and the ban on the use of fresh cream and the manufacture of synthetic cream and ice-cream would be continued This summer we should probably have more milk than we need, and this surplus must be used for the best interests of the nation

Remand Homes

Mr O PEAKE, under secretary to the Home Office, informed the House of Commons that there was an increase in the number of children and young people brought before the juvenile courts It was hoped that the pressure on remand homes and approved schools caused by this abnormal increase in juvenile crime would soon be relieved [1] A conference would shortly be called to consider how best to provide suitable accommodation

QUESTION TIME

N H I Income Limit

Sir ROBERT YOUNG asked the Minister of Health whether he was aware of the difficulties arising, or likely to arise, out of the failure to increase the income limit for compulsory health insurance to £420 a year, as had been done for compulsory unemployment insurance, as many insured persons owing to transference to administrative and similar positions, or from the receipt of overtime payments were being forced to become voluntary contributors, entailing the loss of medical benefit and the payment of all contributions due under such conditions, and as many of these insured persons were likely again to become ordinary workers with less than £250 per annum, so having to become compulsorily insured and causing difficulties for them and much trouble and expense for approved societies, he would raise the income limit at an early date —Mr E. BROWN replied The Secretary of State for Scotland and I have this question under consideration and hope to be able to make a statement shortly

Medical Publishers

Sir ERNEST GRAHAM LITTLE asked the Minister of Labour whether he would give consideration, in revising the schedule of reserved occupations, to the necessity of retaining a sufficient number of employees of firms publishing medical and nursing books, a category in which fresh publications were demanded by the continuous advances in medicine and nursing —Mr GEORGE TOMLINSON, parliamentary secretary to the Ministry of Labour, replied I am advised that it would not be practicable to place such publishing firms in a special category If in any case it is regarded as important to retain the services of a particular individual, application for deferment may be made in the usual manner

Health of Apprentices

Mr DAVID ADAMS asked the President of the Board of Education whether, in conjunction with his experiments in the physical training of apprentices during their working hours, and the effects of this upon their output, he would, in coöperation with the Ministry of Food, experiment also with diets in order to ascertain effects upon output and health —Mr HERWALD RAMSBOTHAM replied I will certainly bear the suggestion in mind

Batteries for Hearing-aids

In reply to a question Captain C WATERHOUSE said There have been difficulties, due to increasingly heavy service demands for miniature cells The problem of arranging for the use of other types of cell in hearing aids is being examined in consultation with the manufacturers, and meanwhile supplies of miniature cells are being released

Diphtheria Inoculation in Edinburgh

In answer to a question Mr T JOHNSTON gave the following figures for diphtheria inoculation in Edinburgh —

	1938	1939	1940
Approx no of children immunised	31,000	33,000	34,000
Immunised children who contracted diphtheria	31	23	9
Fatal cases among these children	1	0	0

Public Health

From the Annual Reports

HARROW

Dr Caryl Thomas starts his report with a dissertation on matters of importance in public-health administration, including milk for mothers and children, food and drugs, and housing Dr Thomas is a barrister-at-law and an epidemiologist, a combination of particular value in discussing the various points he raises In spite of the numerous acts of Parliament, since the Public Health Act of 1875, which deal with the housing of the working classes nobody is satisfied with the policy as it stood at the outbreak of war, and many medical officers, not having had a legal training, cannot find their way through the mass of legislation which to them is more confusing than helpful Dr Thomas calls attention to some of the anomalies which confront us, one, which is outstanding, is that building by-laws will allow houses to be built which promptly become a nuisance The local authority must pass plans which conform to the by-laws even though their officers may point out that the houses when built must speedily become unfit for habitation Dr Thomas tells of a clearance scheme which after months of hard work came to an inquiry The council having considered a slum area from all points of view decided that clearance was the only feasible procedure After weeks of expensive quibbling, the findings of the inquiry were that five properties were to be demolished, but the outbreak of war caused even this slight mitigation of a public disgrace to be shelved

The urban district of Harrow covers 12,558 acres and is densely populated (190 200 inhabitants) The birth-rate shows that it is fertile, the low death-rate that it is healthy, and the population is young The stillbirth-rate was 31 and infantile mortality-rate 38 5 both low and evidence of good midwifery and child welfare The incidence of diphtheria was low—85 notifications in 31 of which the diagnosis was withdrawn—but the fatality reached the very high rate of 19% Dr Thomas notes that when diphtheria is low in prevalence the fatality is high because when the disease is out of mind parents are less suspicious of sore throats in their children, and delay seeking medical advice This is undoubtedly so, but there may be other reasons, a high fatality with a low incidence occurs in other infectious diseases for which we have no specific remedies

CHESTER

Dr J W Lobban's report contains much statistical information but no commentaries, though there were several features in the town's health record which call for explanation We are told that the water-supply is abundant and that the standard of purity obtained has been remarkably good The water is taken from the river Dee and purified, the criterion of purity being absence of *B coli* in 100 c cm The details of chemical analyses for each month of the year are given and these show unusual variations, we are not told from what part

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arch 22, 1941, p 393

interesting study of human nature—the reaction of the varying types of individuals both old and young, and the age-long inability of the average person to put himself or herself in someone else's shoes But I shall have no objection to a rapid shortening of the period of study

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It has been suggested that the majority of the B M A Planning Commission ought to be under 45 years of age because it is the younger men who will have to do the work of the profession in the future It seems to be thought that on account of their age those over 45 are unlikely to plan the kind of profession in which the younger men will want to work Though the respective rôles of youth and age in Parliament and the Cabinet as well as in the councils of medicine might well be considered by physiologists and psychologists as part of our planning for the future, the matter is surely not as simple as that For it is certain that those under 45 will gradually become fogies as old as those they now criticise, and if age determines outlook they will then like the sort of profession that old fogies like now, and not the sort designed by themselves when they were under 45 Moreover, since it is the privilege of youth to disagree with age, the next generation of under 45s will certainly disapprove of the profession planned by those old fogies who by that time will be 50, 60 and 70 It seems, then, that a profession planned to conform to the political fashion of a current age-group is unlikely to satisfy anybody for long

The criticism that public-health interests are inadequately represented on the commission sends one looking for a reason, which is, I think, that practising doctors, however notable the exceptions, are rarely interested in public health As citizens they approve in general of someone doing something to improve public health, but the type of mind which is interested in therapeutics is not often interested in preventive medicine Surgeons have contributed nothing to the prevention of appendicitis, and cardiologists show no signs of contributing anything to the discovery of the ætiology of coronary thrombosis Nor should this be regarded as a reproach to them The truth is that the therapists are concerned with, and interested in, end-results which are remote in time and differ in nature from their causes The causes need to be studied by investigators with entirely different training and interests Public health is still suffering from being regarded as a poor relation of therapeutics There should be a Ministry of Disease concerned with therapeutics and a Ministry of Health concerned with prevention, with, of course, liaison officers between them The Ministry of Health, which, incidentally, would have a large staff of architects and sociologists and other laymen as well as medical research workers, could then get on with its job of abolishing the Ministry of Disease And clinicians, even in war-time, would not have to work in a medical service designed by the Ministry of Health

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Breakfast in bed is a much overrated pastime There are some who adore it, others who detest it, but for the large majority it is merely a great nuisance There are times when one is driven to take breakfast in bed whichever class one belongs to, and the necessary technique requires careful study beforehand, for it is difficult to work out the various possibilities early in the morning when just awakened Shall one lie on one side, balancing on one elbow, and attempt to shovel food and drink with the other hand from a tray on the bedside table into a mouth which seems always aslant? Shall one try to sit up, with the tray balanced precariously on the knees, and guide the food over a wide expanse of blanket and sheet, with all the hazards of the slip betwixt cup and lip? In either case one is driven to think of the ancients who appeared to derive pleasure from reclining at meat The correct technique, I am told, is to sit bolt upright, with the pillows arranged vertically against the head of the bed, and get the tray tucked well into one's lap, but it is still a long way from the plate to the mouth There is always the fear, too, that one will be left thus for some time, while the rest of the family finish their breakfast at leisure in the dining-room, and in the meantime one's chest and arms will get frozen Only the real addicts possess one of those decorative trays with legs that help to bring the food nearer to the mouth and can more easily be disposed of when the meal is completed Eve then the hazards of the game are innumerable, whe I was a boy my most unpleasant aunt—one of th psychopathic tenth I see she was now—had one and th front legs collapsed spilling hot coffee all over he How we did laugh

Parliament

THE serious effects which the Government's ne proposals for the registration of women for war wor may have on the public-health services were emphasise in the debate in the Commons on the third reading c the Consolidated Fund Bill Miss IRENE WARD urge the imperative need for maintaining the efficiency o the nursing services, and for securing proper treatmen for the personnel Nurses' professional organisation were anxious that the new division of nursing in th Ministry of Health should be in the charge of thos qualified and experienced in nursing She also aske for an official announcement on nurses' superannuation What happened to the nurses after the last war mus never happen again Viscountess DAVIDSON said th the effect of the Minister of Labour's broadcast had bee disquieting Many people believed that compulsio would be applied immediately after registration A one civilian hospital of 1500 beds, dealing with old wome removed from hospitals in the large towns, many of th domestic servants had left within 24 hours of Mr Bevin' speech to enlist in one of the armed forces Lad DAVIDSON also asked that mothers with young childre should not be conscripted

Dr EDITH SUMMERSKILL feared that, after a tremen dous amount of propaganda had been done to teac women how to feed their children properly, the Govern ment were now going to hand those children over t unsuitable people who would act as "minders." Minders she said, should only supplement and not be a substitut for day-nurseries The Midwives Institute was askin that the Minister of Health should make it an offenc for a woman to be employed during the four week preceding her confinement Dr SUMMERSKILL suggeste that nursing mothers employed on war work should b allowed time to feed their babies while at work Mis F HORSBRUGH, parliamentary secretary to the Ministr of Health, denied that it was the intention of th Government that people engaged in essential work, suc as work in hospitals, should leave their employment Every effort had been made to add to the numbe of day-nurseries, but they did not meet all the needs and this had led to the system of leaving children in th care of minders The present proposal was to registe these minders so that the health visitors could satisf themselves that they were suitable Miss HORSBRUG said that at present the nursing staff in the E M S hospitals numbered 75,000, of whom 17,000 were i the Civil Nursing Reserve The fever hospitals an some of the special hospitals were not getting sufficien recruits, and they wanted nurses who would go anywher and nurse anyone There were difficulties about nurses superannuation which it would be almost impossible t overcome in war-time, but a further increase of pay wa being made to members of the Civil Nursing Reserve s that they might pay their share of superannuation Under the new scheme they hoped to form a centra register for those who would come into the nursin profession for the duration of the war, or who wer looking forward to work in the nursing profession later They would fix a minimum rate of salary during th war which the hospitals who took probationers from th register would be required to pay This scheme did no go as far as was suggested by the Athlone Committee but it was a step in the right direction

Mr R ASSHETON, parliamentary secretary to th Ministry of Labour, made it clear that if any woma was directed to work to which she objected she would have the right to appeal Women would not be medicall examined on registration, but they could produce medica evidence of disability, on which the Ministry would als be entitled to obtain an independent medical opinion

Surplus Milk

Last week Lord WOOLTON announced in the House o Lords that the Government had decided that in the in the psychological diploma is oddly reminiscent of a dictator's idea of coöperation with a small state or a boa constrictor's hope of coöperation with a lamb. In all three cases there is the same engaging naïvete

Group Captain Symonds is ungenerously in error in accusing the psychotherapist of trying to elbow his way unnecessarily into the sphere of mental disorder The psychotherapist, though not always himself aware of it is in this sphere the authentic voice of that other half of man which, though it may be driven into the wilderness of medical disrepute, will not and cannot be completely silenced

Harley Street, W 1 ALAN McGLASHAN

SIR,—Among various circles of psychiatrists Dr Symonds's presidential address must have had the effect of a landmine Were it not for the fact that acute controversy on general subjects is now the height of bad form we might expect bitter protests from those students of the mind who prefer to ignore the activities of its cerebral basis As it is, Dr Symonds's materialist bomb will no doubt be treated as an unfortunate brick unworthy of notice. Nevertheless the address marks the beginning of the end of "pure" psychiatry particularly of that section which treats psycho-analysis as the core of all wisdom. Pigeon-hole methods of classifying mental conditions likewise receive notice to quit in an address which forsakes "fixed clinical syndromes" for those manifold and mutable abnormal reactions that express a disordered mind In the subject of mental disorder, brain activity and its abnormal disturbances are now being studied from that materialist point of view which recognises the brain to be the physical basis of mind

From this point of view, every case of mental disorder is part of a dynamic "eternal triangle" consisting of the brain and body as a whole, of the mind which is dependent on the brain, and of that external environment which the mind reflects and reacts to through the activities of the nervous system The treatment of mental disorder will therefore embrace not only a consideration of the relationship between the mind and the external environment, but also of the various cerebral activities which relate the individual to the environment It is an axiom that all mental disorder must be based on some corresponding cerebral disorder and clinical science now begins to utilise in practice this principle of modern materialism

At the same time clinicians will not fall into the old error of regarding the external environment as unalterable and "normal," whatever its character, to which the patient must necessarily adapt himself like a prisoner in a cell. War, hunger and social disorganisation give an external environment to which a great many individuals are unable or unwilling to adapt themselves indefinitely, and if clinicians have only "adaptation" to urge upon patients about to leave the mental hospitals the sheep if not the goats among them will surely bolt back to the security of padded cells But in all seriousness, the sociological side of the question cannot be neglected, and the bare doctrine of adaptation to the environment whatever its character is one which has nothing in common with a scientific outlook on society Only a devotee of the blitzkrieg can present today's environment as a state of affairs to which men and women must merely adapt themselves indefinitely Between the abnormalities of psychotics and the "normalities" of modern society there is a closer connexion than one might gather from most textbooks of psychiatry—a connexion not to be disposed of by the simplicities of convulsion therapy

Oxford R. L WORRALL

ANDROGENS IN GYNÆCOLOGY

SIR,—Your leading article of March 15 (p 351) remarks on the masculinising activity of testosterone and its propionate when given for various gynæcological disorders This unwanted action will undoubtedly dissuade many practitioners from availing themselves of an otherwise apparently harmless and effective therapeutic procedure In three of the four complaints mentioned (functional uterine hæmorrhage, dysmenorrhœa and chronic mastitis) the action of testosterone seems to depend on the direct antagonism which it possesses to endogenous œstrogens It has been shown (Emmens, C W and Bradshaw, T E. T *J Endocrinol* 1939, 1, 378) that androstenedione and androstanediol are as potent as testosterone in inhibiting the response of spayed mice to œstrone, yet possess only a fraction of its androgenic activity in mammals ($\frac{1}{6}$ and $\frac{1}{4}$ respectively) It might accordingly be worth while to give these compounds a clinical trial in such disorders, in the hope that they would be as efficient as testosterone in the desired direction, without the same tendency to produce masculinisation in effective doses The inhibitory effect of testosterone on lactation may be due to an indirect action on the pituitary body, and there is no evidence that the other androgens mentioned would be as effective It might nevertheless be again worth while to put to direct test, by clinical trial the question whether one of the other androgens would not produce the desired effect without the undesired concomitant actions of testosterone

C W EMMENS

National Institute for Medical Research, N W 3

THE RIVER EMERGENCY SERVICE

SIR,—As the M O of an ambulance ship in the River Emergency Service I had recently been anxiously waiting for a relief M O to take on my duties, so that I could have seven days' leave still due to me from last year (we are magnanimously given two weeks in the year) At last he arrived and I was all set to get away as I thought. We introduced ourselves He has named me McCork in your journal (March 15, p 359), so I shall return the compliment and call him Bull, but of the Ferdinand instead of the John family He looked over the ambulance ship and wasn't impressed, as there was no private cabin for the M O He saw some V A.D nurses doing Thomas splint drill and, informing me that he hadn't seen a Thomas for twenty years, didn't believe in it and always used a Liston, he said he didn't think much of their efforts Having remained on board for fifteen minutes we went up to our billets He was very upset at the apparent lack of comforts and conveniences and said, "This is a dreadful place Your P.M O told me it was comfortable I must telephone him immediately. I'll just stay two days until you get away, and then clear out" When I told him that I would not leave knowing that he wasn't going to stay until I returned, he said, ' Well, I'll go straight away and departed bag and baggage having been with us exactly half an hour It was with mixed feelings that I watched him jump on a bus, I felt depressed as I saw my week's visit to my family vanishing into the future, but glad that I wasn't leaving the sisters V A D 's and stretcher-bearers (the ambulance officer who is an Ulsterman is able to take care of himself)—whom I have come to regard with some affection, having seen them stand up to five months of the blitz in this dreary dockland—to his mercies Perhaps it was as well that he left the docks and the uncomfortable billets to the "Neutral" and went back to sniff his crocuses and tomasinianus

McCORK

SIR,—Now that one of your peripatetic correspondents has concluded his extremely brief experiment with time and with the Thames and has fled back to his garden perhaps you will allow one of the medical officers who has been with the River Emergency Service for many months to reply to some of his strictures

The giving of lectures, which are more like the chats one used to give to one's clinical clerks or surgical dressers, and the practices, are real and of value The "comfortable billets" are real no longer, for they have mostly been bombed out of existence Had our critic been with us during the early autumn I doubt if he would have written so lightly of a "blitz on the river Trying to rescue people from burning wharves, getting a small peace-time pleasure steamer alongside flaming barges whilst avoiding those that had broken adrift (reminding one of heroes on their way to Valhalla), and trying in the heat and the smoke and the flame to stop pain and stay hæmorrhage has perhaps little in common with the *Crocus tomasinianus* even in its folded-up umbrella stage

When incendiaries rained on a certain dockyard and the sequela of H E was punctually noted, my sisters and nursing auxiliaries in their ' natty uniforms " (what ought they to wear—crinolines or gardening aprons ?) put out dozens of burning bombs and by so doing saved of the system the samples were taken, but these twelve analyses suggest that the water is poor and subject to frequent high pollutions Chester is a *small town of only* 4142 acres and 44,280 inhabitants, or nearly 11 persons per acre *Its birth-rate in 1939 was* 15 6 , death-rate 13 8 , infantile mortality 77 3 and maternal mortality 5 4 There were 37 deaths from all tuberculosis, giving a mortality-rate of 0 84 based on the population of 45,090—the number given by the Registrar General for estimating death-rates This is not a good health record for 1939 The endemic infectious diseases were not particularly troublesome in the year, the only one calling for comment was diphtheria with 135 notifications and 10 deaths

EXETER

Exeter is another small city, but its population of 70,000 being more than half as large again as that of Chester gives it a density of nearly 17 to the acre Most of our older cities, though not seriously overcrowded, are cramped, retaining some of the pattern of the fortified walled cities of medieval times Modern conditions would be served better if we cleared the centres of our cities and dispersed the population in the peripheries At present the enemy is doing the former for us, though hardly with discrimination , but whether we shall seize the opportunity to do our own part remains to be seen

Of the 212 persons on the blind register of Exeter at the end of 1939 all but one were over 50 years of age Owing to the Blind Persons Act, we have nearly complete records of the prevalence of blindness, and these show strikingly how prevention has reduced this calamity It is unfortunate that we have no such information of the deaf and do not know whether we have reduced deafness by preventive measures Dr G B Page's report indicates the extent to which tuberculosis is found in animals slaughtered for human consumption, not because the findings are exceptional at Exeter, but because they are average In carcases of cattle other than cows, 4 5% show evidence of tuberculosis Cows show definite lesions to the extent of 11 8%, and pigs 1 7% In calves tuberculosis is rare and in ovines a curiosity Of 34 tons 13 cwt of all foods condemned, 19 tons 5 cwt owed their condemnation to tuberculosis

Infectious Disease in England and Wales

WEEK ENDED MARCH 15

Notifications —The following cases of infectious disease were *notified* during the week smallpox, 0 , scarlet fever 1221 , whooping-cough, 3338 , diphtheria, 1033 , enteric fever, 28 , measles (excluding rubella), 15,056 , pneumonia (primary or influenzal), 1318 , puerperal pyrexia, 141 , cerebrospinal fever, 330 , poliomyelitis, 5 , polio-encephalitis, 2 , encephalitis lethargica, 7 , dysentery, 146 , ophthalmia neonatorum, 77 No case of cholera, plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospitals of the London County Council on March 14 was 1837, including scarlet fever, 230 , diphtheria, 338 , measles, 451 , whooping-cough, 253 enteritis, 20 , chicken pox, 121 , erysipelas, 38 , mumps, 3 , poliomyelitis, 2 , dysentery, 26 , cerebrospinal fever, 85 , puerperal sepsis, 14 , enteric fevers, 4 , german measles, 9 , other diseases (non infectious), 135 , not yet diagnosed, 107

Deaths —In 126 great towns there was no death from smallpox, enteric fever or scarlet fever, 38 (2) from whooping-cough, 25 (1) from measles, 31 (0) from diphtheria, 36 (4) from diarrhœa and enteritis under 2 years, and 132 (15) from influenza The figures in parentheses are those for London itself

There were 7 deaths from whooping cough at Birmingham and 6 at Liverpool, and in the same week at Glasgow there were 15 Liverpool reported 5 fatal cases of diphtheria Bradford had 9 deaths from influenza, Birmingham 6, no other great town more than 4

The number of stillbirths notified during the week was 230 (corresponding to a rate of 42 per thousand total births) including 16 in London

INCIDENCE OF INFLUENZA

In the week ended March 15, 132 deaths were ascribed *to influenza in the great towns, 67 fewer than in the* previous week Of these deaths 6 8% were at ages under 25 and 54 54% at ages over 65 In the county of London 15 deaths were registered (13 in the previous week) The proportion of total deaths coming from the South-Eastern Area was 28 36% It would appear that the winter epidemic is now over

Letters to the Editor

HOSPITALS RADON CENTRE

SIR,—As the result of a generous gift from the British War Relief Society of New York further supplies of radon are now assured The gift was made to the British Hospitals Association, who have asked the Middlesex Hospital to administer it This new supply is intended for the use of hospitals throughout the country and no distinction will be made between requisitions for paying and non-paying patients It is hoped to increase the amount of radium in solution at this new centre when the demand warrants it

In the first instance it will be necessary to charge all hospitals for supplies of radon, and it has been decided to charge for it at the lowest basic rates obtaining at the *Medical Research Council radon centre—namely,* one shilling a millicurie—with a reduction to sixpence a millicurie for any quantity in excess of fifty millicuries the minimum charge for any radon requisition will be one guinea It is hoped that in the near future some arrangement will be possible whereby the burden of such payments may be lightened

Applications for radon may now be sent to the Hospitals Radon Centre, c/o Barton Lime Co , Barton in-the-Clay, Beds (telephone Hexton 210)

Middlesex Hospital, W 1 SIDNEY RUSS

THE NEUROLOGICAL APPROACH TO MENTAL DISORDER

SIR,—In your issue of March 15 Group Captain Symonds puts forward a brilliant contribution to the understanding of mental disorder The more's the pity it is vitiated by its unadmitted philosophic bias Distinguished members of our profession seem peculiarly apt to be unaware that any attitude, however well supported by observed *facts, rests inevitably* upon a philosophic basis , and their unawareness leads to much debate, marked equally by erudition and irrelevance Neuro-psychiatry *versus* medical psychology, as rival approaches to mental disorder, is one of the most fascinating—and profound—of these philosophic cleavages The mock-modest pretension of the scientist to have no time for philosophy does not absolve him from philosophic bias, but merely reveals his bias to be unconscious—or, as Group Captain Symonds may prefer to put it, forgotten This avoidable occurrence is, in fact, responsible for most of the needless arguments between intelligent men

What is here suggested is that Group Captain Symonds is right, demonstrably and irrefutably right, in his conclusions His world picture, in which his views on mental disorder have their inevitable setting, is consistent and as he says " makes sense " From his neuro-psychiatric fellows he should receive a magnificent endorsement of his opinions In the intelligent world as a whole, however, the unanimity might be less marked, possibly by some fifty per cent It is here suggested that the dissident half is not composed of merely ignorant and contumacious persons, but of persons whose world picture, in which their views on mental disorder have their inevitable setting, is *equally consistent, and* makes equal though very different sense It is finally suggested, that man is not *adequately expressed* in either world picture alone

The form-makers and the form-breakers—Abel and his brother Cain, the Aristotelians and the Platonists, the Apollonians and the Dionysians—these are the eternal prototypes through whose labours the world first moulds itself in lovely forms, then breaks through, painfully and often cruelly, to fresh beauty Always it was, and it will always be, the tragedy of the form-making mind striving to bring its well-loved order out of chaos, to see suddenly breaking from some unlooked-for covert Priapus with his imprudent gestures, Pan with his insulting pipes We are still bound by these prototypal limitations, and till the spanning mind comes forward no honest truce is possible What is, however, possible is for each to work in good-humoured self-awareness and equal rivalry The kind offer of cooperation on the basis that " there is no justification whatever for psychotherapy as a special branch of medicine," and with insistence on an increased relative importance for neurology

The unembroidered baldness of this note is determined in part by war conditions and also by the fact that the number of cases of the type is necessarily small

Bath A GUIRDHAM

ANURIA WITH CASTS

SIR,—In his account (*Lancet* March 15, p 345) of the pathological findings in nine women who had recently aborted, and who had died of suppression of urine, Dr Bratton says that the toxic process is not necessarily puerperal in origin , as these are not the post-mortem appearances of toxæmia of pregnancy, he might have gone further and said that this process is not puerperal in origin Mr Discombe and I have recently recorded (*Brit med J* 1940, 1, 525) the clinical and pathological notes of a patient who died with post-mortem findings identical to those which he has described, but the result of quinine poisoning In our case 5 04 g (76 grains) of the pure alkaloid had been taken by the mouth A search through the literature revealed only two similar instances, (Terplan, K L and Javert, C T *J Amer med Assoc* 1936, 106, 509 , and Raven, H M (*Brit med J* 1927 2, 59)

I hope it may not be too late for Dr Bratton to be able to trace whether quinine had been taken in his cases As they are all abortions the presumption is strong, and if so then the diagnosis of the disease process associated with his pathological findings is complete

Harley Street, W 1 C K VARTAN

TREATMENT OF ASPHYXIA NEONATORUM

SIR,—As you say, the methods of resuscitation outlined in your annotation of March 15 (p 355) are rather beyond the capacity of the general practitioner, and the proportion of babies requiring resuscitation (200 out of 1200) seems abnormally high Apparently the authors do not think that Barcroft's work on the initiation of respiration (*Lancet*, 1939, 2, 838, and see Leak, *Ibid*, p 1004) has much clinical bearing on this problem As a contribution to the treatment by the G P of those really bad cases which occasionally arise, I should like to record such a case which occurred about 15 months ago After a not very difficult forceps delivery the infant completely failed to respond to all my methods of resuscitation which included the administration of lobeline and ½ c cm of Cardiazol ephedrine, which latter I usually find more effective than lobeline itself After over 10 minutes' effort the baby seemed hopeless so I injected into the heart the remaining ½ c cm of cardiazol-ephedrine The effect was instantaneous the heart began to beat at once, respiration rapidly followed and within 2 minutes the baby was breathing almost normally No ill effects seemed to follow this treatment and the child is still alive and well Naturally, I do not recommend such a measure as a routine, but it may be a help to other practitioners who have not all the facilities of Russ and Strong in New Orleans, and anything which will avert the tragedy of a stillbirth is well worth while

Winsford, Cheshire W N LEAK

"WHOLEMEAL ENTHUSIASM"

SIR,—On reading the article under this heading in your issue of March 15 (p 370) I rubbed my eyes in amazement Can this be the same journal, I asked myself, which published as far back as Sept 14, 1912, a lengthy and generally favourable notice of Our Children's Health at Home and at School containing a report of the society's first guildhall school conference, and in recent years welcomed its offer to submit evidence to THE LANCET Commission on Nursing ? The Food Education Society had no connexion with Miss May Yates and the Bread and Food Reform League beyond cooperating in the effort to make wholewheat generally available It never advocated, as your reviewer suggests, "the exclusive use of wholemeal bread ' Nor is it committed to the views of speakers at its conferences, or of others figuring in Bread in Peace and War This society, which is said to be the oldest in the world for the education of the people in nutrition, has the support of the medical, dental, nursing and educational professions, and of social workers It is undogmatic and concerned with every aspect of dietetics, including food habits

London, N W 3 CHARLES E HECHT,
Hon Sec Food Education Society

"IN GRATITUDE TO MY MEDICAL COLLEAGUES"

SIR —I desire to acknowledge through your columns a donation of £50 from a doctor as a mark of appreciation of the kindness and consideration received from his medical colleagues during his wife's recent illness, which necessitated an extensive abdominal operation He adds " It is a very small return for all the kindness and skill that has been expended on my wife I wish my means allowed for a bigger cheque but I hope that I may be helping, through the Royal Medical Benevolent Fund, some unfortunate fellow medico or his dependants "

1, Balliol House, Manorfields,
S W 15 LEWIS G GLOVER,
Hon Treasurer, R M B F

INFECTION FROM DUST

SIR,—Considerable attention is being directed today towards floor dust as a source of cross-infection in hospital wards and elsewhere (Andrewes, C H *Lancet*, 1940, 2, 770), it being known that a number of organisms, particularly *Streptococcus pyogenes*, may remain there viable and at least potentially pathogenic for periods extending into weeks In the course of an extensive investigation into the preventive aspects of cross-infection now being made in this hospital on behalf of the War Office and in conjunction with the team of workers at the National Institute for Medical Research, Hampstead, we have assayed the streptococcal content of a number of dust samples from hospital wards Our complete data will be published later, but the results of these analyses are so striking that they deserve mention now to emphasise this aspect of such a commonplace as dust

During a mild outbreak of streptococcal sore throats and follicular tonsillitis in one ward a few weeks ago, all the dust swept up one morning was assayed, each sample being labelled as to its origin and treated separately The ward is an ordinary 26-bed hospital ward divided into two by a glass partition and door , the main corridor with the offices, &c and two single-bed isolation cubicles, runs off the ward at right angles At the end of this there is a large day-room which is only used by patients from the ward beneath, although the patients in this ward have to traverse it to reach their kitchen On the day in question there were 22 patients in the ward, all of whom except 3 exhibited *Strep pyogenes* (mainly type 6) in their throats One of the most severe cases (F) was isolated in a side ward The initial cases occurred nine days previously , the epidemic spread did not begin until four days before this experiment

The total weight of the dust was 29 06 g , which, for a morning sweeping, reflects a clean, well-kept ward The hæmolytic streptococci were distributed among the various samples as follows —

Ward (16 bed section)	16,261 000	Office	1,041,000
Ward (10 bed section)	23 323,000	Linen room	939 000
Cubicle 1 (F)	17 020 000	Staff day room	329 000
Cubicle 2 (non clinical case)	1 173 000	Day room (transit only) .	320,000
Surgery (E N T dept)	160,000	Entrance corridor (kitchen)	1 171,000
Main corridor	1 411,000	Annexe (w c 's, baths, &c)	38,745,000

The total number of hæmolytic streptococci swept up from the various parts of this ward on that particular morning was nearly 102,000,000

These experiments, apart from demonstrating the enormous numbers of bacteria which are present on the floor of an apparently clean ward, illustrate two important facts First, that very high bacterial concentrations may be met with even in small, single-bed isolation wards, and unless these are effectively dealt with they may represent a semi-permanent reservoir of infection for succeeding patients in the same ward Secondly, that the highest number of organisms is present, not in the dust of the ward, but in the dust of the ward annexe with its w c 's, lavatories and baths This observation confirms the work of Miles et al (*Brit med J* 1940, 2, 855, 895) on the rôle of baths in hospital cross-infections

If the organisms remained on the floor the risk of infection would be greatly reduced In ordinary wards, of course, without special floor treatment this is not so, and millions are re-projected into the air with each sweeping Parallel air counts during this work showed that while F's cubicle was being swept, 1 500,000 gentian violet the dockyard near their billet and so freed the fire brigade to attend to other fires

I have never met the "well-fed, smooth-spoken and pleasant" Dr McCork, as I have not served on an up-river ship, but if, as your correspondent avers, he comes from a neutral country all the more honour to him for joining us in the front line

All comparisons are invidious but I claim that if there was a front-line between the fall of Dunkirk and the start of the Wavell campaign it was the Thames Estuary, and from personal observation I can state that the members of the River Emergency Service—doctors, sisters, nurses, stretcher-bearers, and professional crews—behaved with a gallantry and efficiency that left me their humble admirer During latter weeks, when the longueurs of inactivity have been more pronounced, they have accepted their billet-less, bath-less, communal-sleeping fate with cheerfulness and dignity and so far as I know not one of them has scuttled back to his or her rabbit-hutch They are rightly proud of their record

R C H

SIR,—I feel that your peripatetic correspondent has done an injustice to medical officers, nurses and stretcher bearers who have given up comfortable jobs to join the River Emergency Service, many since the outbreak of war At the beginning many of the personnel slept and cooked for themselves on small steamers built for short pleasure trips, the hours on duty being 96 hours on and 48 hours off After some months good billets were gradually provided near the action stations of the ambulance ships As a result of enemy action six billets have been either demolished or badly damaged The personnel have shown great cheerfulness in putting up with a good deal of discomfort in an endeavour to continue to cover their sphere of action The billets to which your correspondent refers are a hospital ward, furnished with armchairs, the usual fires and very good comfortable beds The personnel consider them very good billets compared to some other stations more severely knocked about It is perhaps just as well that your correspondent returned to the care of his crocuses

D S GORDON,
P M O , Port of London Authority

A HUNDRED CASES OF BREECH PRESENTATION

SIR,—Drs Gairdner and Jackson gave figures of the fœtal mortality under the various forms of treatment adopted in each series of cases—i e , version, delivery per vaginam, cæsarean section

11 cases were treated successfully by version and delivered as vertices 9 cases were treated unsuccessfully by version Some of these were delivered vaginally and some by cæsarean section Maternal mortality nil, fœtal mortality 10%

63 cases were delivered vaginally Maternal mortality nil, fœtal mortality 28 9%

26 cases were delivered by cæsarean section Maternal mortality nil, fœtal mortality 3 8%

The details of the various cases and the technique employed in each are so meagre that the reader will be unable to draw any conclusion as to the possible or probable cause of the fœtal mortality Little information was given as to how the aftercoming head was delivered

Obviously, the authors have been impressed by the low fœtal mortality associated with the cæsarean operation "It would be idle," the authors state, "to attempt to draw conclusions from a mere 100 cases" I would go further and state that it would be distinctly dangerous to draw any conclusions from this series of cases as presented Simply because the cæsarean operation has given good results in this small number of cases it cannot be accepted that the operation is the treatment of choice in breech presentation The authors state their opinion that "if breech presentation is diagnosed during the antenatal period version should be attempted , if version fails then cæsarean section is the treatment of choice" Surely this cannot be accepted External version is an operation which requires considerable experience and skill to carry out correctly It is a serious procedure and is attended by definite risks to the baby There is an increasing amount of data to prove that the fœtal mortality following external version is in the region of 5–6% Failure to turn a breech presentation into a vertex cannot be accepted as an indication for cæsarean section So much depends upon the operator and the local conditions I will grant that cæsarean section has its place like all other forms of treatment in breech cases The operation should, however, be reserved for such cases as placenta prævia, extended limbs in an elderly primi gravida or in one with slightly contracted pelvis Emergency cases, when seen late in labour with the breech presenting, present a difficult problem The easiest way out of the difficulty will, in many cases, be cæsarean section The risk of section in these cases is sepsis following manipulation or previous efforts to deliver from below

Figures prepared for me by Dr Mary Mayeur, obstetric assistant at the Liverpool Maternity Hospital, show that there are other methods of dealing with breech presentation than external version and cæsarean section

VAGINAL DELIVERY OF UNCOMPLICATED BREECH PRESENTATION

—	Primi gravidæ	Fœtal mortality (per cent)	Multi gravidæ	Fœtal mortality (per cent)
1933	32	3 1	23	4 3
1934	34	5 8	26	15 0
1935	32	9 3	21	9 5
1936	35	5 7	18	11 0
1937	27	7 4	25	nil
1938	39	5 1	21	nil
1939	45	8 8	25	4 3
1940	42	4 7	17	nil
Total	286	—	176	—

Average fœtal mortality Primigravidæ—6 23%
" " " Multigravidæ—5 5%

During the above years cæsarean section was only performed in 40 cases for breech presentation The maternal mortality was nil and the fœtal mortality 2 5%

Liverpool JOHN WILLIAM BURNS

A PITUITARY SYNDROME WITH CARDIAC ABNORMALITY

SIR,—The association between pituitary deficiency of different varieties and mental disorders of equal diversity is a commonplace observation Far less common, and only rarely appreciated, is the relationship between pituitary dyscrazia and cardiac abnormality In French literature there are one or two references to pituitary disease coexisting with vaguely defined conditions such as cardiac hypoplasia What has not been noted previously is a syndrome characterised by both cardiac abnormality and mental abnormality in patients with anterior pituitary deficiency

The cardiac abnormality has one main characteristic It is found early in these cases and is probably congenital Indeed the most characteristic heart lesions include the less dangerous varieties of congenital heart disease These patients have often been watched for heart conditions in childhood and early youth before symptoms traceable to glandular dysfunction were prominent in the picture The mental abnormalities noted are not usually psychotic The adolescent patient with these symptoms falls into the psychoneurotic category There is no characteristic collection of psychological symptoms associated with this syndrome but there is certainly a class of patients in their teens in which vaguely epileptoid phenomena are noticeable It seems possible that some of these "absences" and vague collapses may be attributable to the cardiac condition The pituitary condition present always involved diminished activity of the anterior lobe Lorraine and Brissaud phenomena are more common, but Frohlich symptoms are possible I have not met this syndrome in women

One characteristic of these cases is the complexion The skin is unusually delicate The colouring is lightly cyanotic This hue is chiefly over the malar bones and sometimes lower down in the centre of the cheek The rest of the skin is faintly yellow This yellow colour becomes intensified in long-standing cases Cyanosis and yellow tinting of the skin are found in many conditions, but this peculiar cyanosis combined with the delicate texture of the skin is quite characteristic

Medical News

niversity of Oxford

On Wednesday, June 4, the general medical electorate, hich consists of all Oxford graduates in medicine who are embers of convocation will elect two members to the board the faculty of medicine The members elected will come to office on the first day of Michaelmas term, 1941 The nior will hold office for two years and the junior for one year ominations will be received by the secretary of faculties at e university registry, up to 10 A.M on Wednesday, May 14 ach nomination must be signed by six members of the ectorate

niversity of Dublin

On March 19 at the school of physic Trinity College, the llowing degrees were conferred —

M.A O—O D T D Browne
M.D—R. T Jackson
M.B B Ch B.A O—A F Crowley, A H H Guilbride, J R ealy, H. B C Houston L C Jacobson, Bernard Kernoff, C D acCarthy, M. A Majekodunmi Kathleen M Patterson, Alicia Pike, Simon Smullen and W J Thompson

ational University of Ireland

On March 6 the honorary degree of doctor of science was onferred on Dr Gordon Holmes, F R S Dr F R M Walshe, nd Prof E Hey Groves Apart from their scientific stinction, the three graduands have personal associations ith Ireland Dr Holmes is a native of Co Louth and as educated at Trinity College, Dublin, where he took his edical degrees in 1898 and in 1933 the college conferred on im the honorary degree of D Sc Dr Walshe, though not orn in Ireland, can claim Irish parentage, for his father was orn in Co Mayo Mr Hey Groves was for several years n external examiner in surgery of the university Dr alshe and Mr Hey Groves were unable to attend the raduation, but Dr Holmes was present, and afterwards elivered a lecture on neurosis and the war

niversity of Bristol

Mr J M Yoffey, lecturer in anatomy at the University ollege of South Wales and Monmouthshire, has been ppointed to the chair of anatomy in succession to Prof S E hitnall, who is shortly retiring

Mr Yoffey qualified M B from the University of Manchester in 924 and took his B Sc two years later He was awarded a Leech search fellowship in 1926 and obtained his M D with commendation in 1928, after which he held a B M.A research scholarship le was house surgeon at the Manchester Royal Infirmary, passing n to demonstrate in the anatomical department and taking the R C S in 1932 He then spent two years in America with a ockefeller foundation and first went to Cardiff as senior demon trator in anatomy He has made a special study of the lymphatic athway from nose and pharynx, and this year he delivered a unterian lecture on the subject, which will shortly be published in ur columns

oyal College of Obstetricians and Gynæcologists

At recent examinations for the D.R C O G the following ere successful —

Marie H Calverley, L E Cowan, Ursula M Dick, Marjorie O Dunster, D S Foster R R Gordon C N Gosse Ruth M Howitt, L L T Jones, Agnes M. D Milne James Overton Mary A Rogerson, C R. Slinning, Christine M Stacey, Evelyn E Steed and Lucy M Sutcliffe.

On April 2, at 4 30 P M , at the Royal Society of Medicine Dr H P Bayon will address the section of history of medicine on the conquest of lues venerea, and at the same time at the ection of surgery, Mr Jocelyn Swan, Dr C Worster-Drought and Mr W Rowley Bristow will open a discussion on peripheral nerve injuries

The house and library of the society will be closed from April 11 to 14, both days inclusive

The next meeting of the Shaftesbury Military Hospital Medical Society will be held on Saturday, March 29 at 3 P.M , when Dr Charles Newman and Mr Reginald Payne will open a discussion on the dyspeptic in the army On Tuesday, April 1, at 3 P M., Lord Horder will address the society on the *future* of medicine

A meeting of the Medical Society of London will be held at 11 Chandos Street, W 1, on Monday, March 31 at 4 30 P M , when Dr John M Converse and Mr Alan Hunt will open a discussion on the factors influencing the healing of wounds

On Wednesday, April 2 at 2 30 P M at the Royal Society of Arts, John Adam Street, London, W C 2, Lord Horder will read a paper entitled The Modern Troglodyte

Notes, Comments and Abstracts

CONTROL OF OBNOXIOUS INSECTS

BY ERIC HARDY, F Z S

IN normal times a hospital is seldom worried by insects outside its kitchens and boiler houses, but under war-time conditions there may be trouble from the use of buildings placed near farms brooks or other breeding places The hospital s chief insect visitors are house-flies, gnats or mosquitoes cockroaches and crickets Cleanliness is no precaution against them in fact if it means a predominance of white materials it may even attract flies Ventilation, however helps by keeping the air cool and dry Marking house-flies with coloured chalk has proved that they will travel 13 miles in a couple of days which means that a hospital's source of flies can be manure or refuse heaps, stable yards or cow-sheds up to that distance away

There are two house-flies causing the trouble The one which appears in spring and summer and forms jerky dancing parties under the lights is the lesser house-fly, which has three dark lines (hard to see in the male) down its somewhat slender body , it generally breeds in rotten damp paper, decaying vegetation behind old wallpaper and plaster and in rubbish The common house-fly does not appear until about July, and it is then the commonest *species until September when the females hibernate for* the winter in warm retreats ready to emerge in spring and lay their eggs The common house-fly breeds in fresh stable manure or in earth closets They contaminate food and clothes with their cushion-like feet and their hairy bodies and by their habit of feeding by ejecting a blob of saliva to dissolve the food before they suck it back in solution Their usual life is 34 days If their breeding-place can be located in a local stable, fowl-run or farmyard the manure can be sterilised chemically by sprinkling it with iron sulphate mixed with 40 parts of soil but not more than 15 tons per acre of such treated manure should be used by farms for agricultural purposes Alternatively, the fresh manure can be stacked daily on a wooden platform, supported by posts a foot high over a 4-in concrete basin kept full of water The flies will choose this fresh manure for breeding in, and when their mature maggots or larvæ leave the manure to seek a pupating site they will fall off the edge of the platform into the water trough and be drowned , up to 99% of the larvæ can be destroyed by this method If manure is forked over frequently, larvæ can be rapidly destroyed by raking them into the hot deep portions of the manure *heap Gnats or mosquitoes most often inflict bites indoors* because the biting female gnat hibernates , the males have no bite and mostly die off in autumn Although the straight-bodied *Anophelcs* mosquitoes have the worst reputation the hump-backed *Culex* species are more common The larval stage of mosquitoes is aquatic, and likely breeding grounds are the standing water in soft-water butts badly drained fields and camping sites blocked ditches and dykes

Indoors flies and gnats can be repelled by selecting certain colours for decoration H F Nuttall, with others, has shown that pale yellow repels gnats or mosquitoes , so that if curtains lampshades, fanlights, walls and ceilings are that colour they will prove a deterrent to the insects This colour scheme will also discourage—or at least not encourage—house-flies and even wasps which are attracted by whitewashed or white-painted ceilings and walls Pale blue is also more effective than white in discouraging flies, and government stables in Denmark removed their fly-trouble by using a bluewash instead of whitewash This method has critics because insects may put up with a repellant colour if no alternative offers A saucer of 10% formalin as the only available drink in a room will attract and kill flies and a 2% formalin or a pyrethrum oil spray is effective on their dancing parties Adhesive fly papers are most effective when scented with geranium or rose oil There are reliable commercial insecticides which are highly effective when used as sprays, but it is important to make sure that those chosen are really lethal and do not merely stupefy the insects temporarily

Wasps bluebottles biting grey stable flies ants and bees are as a rule only accidental visitors , if they become blood agar plates representing 10 cu ft air grew as many as 141 *Strep pyogenes* type 6 corresponding to his infecting organism These were undoubtedly derived from the enormous reservoir of floor dust which is being constantly implemented during the patient's infective stage The importance of allaying these dusts by such means as treatment of the floors with spindle oil (Van den Ende, Lush and Edward, *Lancet*, 1940, 2, 133), which our experiments have shown to be very effective for this purpose, cannot be too strongly emphasised

Shenley, Herts JOHN C THOMAS

IRRIGATION OF BURNS

SIR,—I am extremely interested in Mr Fraenkel's statement in your last issue that the hypochlorite irrigation method produces a "clear, glossy, transparent and elastic covering of the raw surfaces" This film cannot be an interfacial membrane of the Ascherson type and is akin to that produced by protein denaturation at an air/water surface, especially foam

What is common to the tannic acid, triple dye, albumin, hypochlorite irrigation, and oil treatments is the formation of a membrane Only the oil treatment, however, produces a true liquid/liquid interfacial membrane of polar-nonpolar character, providing for permeability of both lipoid- and water-soluble materials Such a film, too, is the one most responsive to the presence of ions, notably calcium ions In other words, this type of membrane is the nearest approach biologically to membrane in vivo It is the one most likely to serve as a vehicle for appropriate medication whilst still operating to seal areas whence serum would leak.

Orpington WILLIAM CLAYTON

Obituary

JAMES IAN McCONNELL

M B DURH , LIEUTENANT, R A M C

Lieutenant J I McConnell was the elder son of Dr James McConnell, school medical officer for Tynemouth He was educated at Uppingham School where he was a member of the O T C He graduated M B from the Durham College of Medicine in June, 1939, and in August was appointed a house-surgeon at the Royal Victoria Infirmary, Newcastle He resigned in the following November when he obtained a commission with the R A M C. At first he was attached to an ambulance unit but later he became a battalion medical officer with the Sherwood Foresters He took part in the Norwegian campaign and last May was reported "missing, believed prisoner of war" In December, however, news was received from the Norwegian Red Cross that he had been buried at Lillehammer on April 28. No other particulars were given

Gladstone Adams Whitley Bay

As a student McConnell worked hard but he found time to take an active part in college life and a friend who faced with him the pleasures and adversities of a medical student's life, writes "With his ready humour and disarming cheerfulness Ian McConnell was a well-known and popular figure He took a keen interest in the academic and social side of university life On the rugby field his unorthodox and often unique tactics proved a constant thorn in the side of the opponents A good companion and a true friend he was welcome at any gathering of the medical fraternity, whether on the Students Representative Council, in the University Union, in O T C camps or at medical dances—all institutions which he supported vigorously" When he could escape from his work and town life he was happiest fishing a border stream or watching bird life while

MARCUS MAX ISSERLIN

Professor Isserlin, who has died in Sheffield where he found refuge from Nazi persecution, is best known to neurologists as the author of a monograph on aphasia in the great "Handbuch der Neurologie" After graduating in 1902, he studied physiology and psychology before joining Kraepelin's staff in Heidelberg Later he followed him to Munich as research worker and associate professor, becoming head of Kraepelin's psychological laboratory During this period he was mainly concerned with the analysis of voluntary movements, he also introduced experimental phonetics into the study of anomalies of speech in nervous and mental disease During the last war he was in charge of one of the centres for head injuries in soldiers, after the war Isserlin's genius for organisation made it a unique place for the treatment, aftercare and vocational guidance of cerebral injuries With American help he built the Heckscher Institution for nervous disease which originally admitted war victims only, but was later enlarged to admit civilian patients after accidents and defective children It consisted of an outpatient department, a hospital for temporary treatment, a home for invalids, curative workshops, laboratory, and a statistical and follow up department for cases of cerebral injury in the Southern contingent of the German army Isserlin's interest centred more and more round the disturbances of speech, and these patients provided rich material for study which culminated in his monograph on aphasia and in a series of articles on the patho-physiology of speech Combining as he did a wide experience in cerebral symptomatology with a thorough knowledge of modern psychology he was able to replace the association psychology, employed by the diagram makers of aphasia, with modern views still retaining well-established principles of localisation in the brain It had been his hope that some of his experience might be of use here and now in the care and treatment of cerebral injury

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Lieut -Colonel H E PRIESTLEY, who died at Yateley, Hants, on March 15, will be remembered as one of the heroes of the typhus epidemic which broke out in the Wittenberg camp for prisoners of war at the end of 1914, when for nine months the camp was cut off from the outside world For his devotion and competence Priestley was awarded the C M G

Lieutenant DONALD ALFRED BIRD, R A M C, was killed in France on June 18, 1940 He was attached to the 1st East Surrey regiment Lieutenant Bird was born in Canada in 1914 He took the Scottish conjoint qualification in 1939 and soon after obtained a short service commission in the R.A M C He began a course at the R A M College which was interrupted by the outbreak of war

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ROYAL SOCIETY —The following have been elected to the fellowship of the society —

W N Benson, professor of Geology, University of Otago, Dunedin H J Bhabha, reader in theoretical physics, Indian Institute of Science, Bangalore , E C Bullard, Smithson research fellow of the Royal Society , C D Darlington, director, John Innes Horticultural Institution , P I Dee, university lecturer in physics, Cambridge Surgeon Rear Admiral S F Dudley, M D , medical director general of the Navy (designate) , J C Eccles, M B , director, Kanematsu Memorial Institute for Pathology, Sydney , H W Florey, M B , professor of pathology, University of Oxford , A A Griffiths research engineer, Rolls Royce, Ltd , H W Melville, professor of chemistry, University of Aberdeen , Joseph Needham, reader in biochemistry, Univeristy of Cambridge , Sir David Rivett, deputy chairman and chief executive officer, Australian Council for Scientific and Industrial Research , Alexander Robertson professor of organic chemistry, University of Liverpool , T G Room, professor of mathematics, University of Sydney , A J Rowledge, consultant engineer to Rolls Royce Ltd , H Scott, assistant keeper of entomology, British Museum (natural history) , F Simon, reader in thermodynamics, University of Oxford , H G Thornton, head of the bacteriology department, Rothamsted Experimental Station R A Watson Watt scientific advisor on telecommunications Ministry of Aircraft Production , and P Bruce White, member of the scientific staff, National Institute for Medical Research

Flight Lieutenant D A Smith, M B Edin , has been appointed to order of the British Empire (military division) Flight Lieutenant W N Whiteside, M B Dubl , Flight Lieutenant J L Brown, M B Edin , and Flight Lieutenant [illegible] have been mentioned in dis

ORIGINAL ARTICLES

EFFORT SYNDROME

DIAGNOSTIC AND THERAPEUTIC VALUE OF EXERCISES

BY SIR ADOLPHE ABRAHAMS O B E, M D Camb, F R C P
PHYSICIAN TO THE WESTMINSTER HOSPITAL

THE term effort syndrome is one which we employ, in default of a better, appreciating that none will be universally acceptable It meets the generally established definition of the condition as one of ill health in which the signs and symptoms produced in normal subjects by excessive exercise are called forth by lesser amounts and in which no physical signs of structural disease are discovered Alternatively it may be defined as an abnormal physiological reaction to effort with the production of breathlessness, disproportionate or premature exhaustion, palpitations, precordial pain, faintness, dizziness and blurred vision

Were such definitions unexceptionable, it would be reasonable to regard the subjects as exhibiting merely a depressed capacity for exertion The cause of such an incapacity might be matter for investigation but at least it could be agreed that since physical ability is only relative the subjects under consideration are merely those who stand at the bottom of the scale To such conclusions there are cogent objections, the first being to the question-begging adjective " excessive " as applied to exercise for normal individuals I would prefer strenuous, severe violent or extreme Secondly, no degree of exercise however strenuous will produce in a healthy person the outstanding symptoms which are produced as the result of a minor degree of effort in a subject of this syndrome, and which are, moreover, to some extent present in him even without antecedent effort

Graduated exercises have been recommended as a kind of universal treatment The differences in individual athletic ability are well recognised, but it is argued that by exercise some degree of improvement is possible to everybody and that the grading which in consequence results will be of practical value On this reasoning effort syndrome would be equivalent to the " out of condition " state, and would demand a course of training more or less analogous to that of an athlete preparing for a contest Exercises have their use but their application is limited A course of physical training will usually benefit the under-developed, ill-nourished youth who has lived under bad conditions, physical and hygienic, and who partly from disinclination partly from lack of opportunity has never taken exercise In him the reduced capacity for exertion is a real example of " unfitness " and he may be trained in the orthodox sense It is often forgotten that under service conditions all sorts of advantageous circumstances are operating simultaneously good and plentiful food, regularity in living, absence of anxiety about employment and a feeling of security on this score, discipline, and an ordered life which ensures moderation in tobacco and alcohol, and the avoidance of bad habits The rapid improvement in physique and capacity for effort which occur in such a type are advanced as evidence of the universal value of " P T ," but though P T plays a part the part is not the whole

Subjects of postinfective asthenia often exhibit an incapacity for effort, and some infections are particularly potent in this respect, especially trench fever and influenza It is sometimes maintained that myocardial weakness is the cause of such incapacity, but it is far more likely that the infection has affected the vasomotor system Vasomotor stability will return in time without treatment, but its return will be hastened by such exercises as can be carried out without distress

The toxæmic element in such cases has encouraged the belief that all, or most, sufferers from effort syndrome are victims of chronic sepsis, the eradication of which is of primary importance Teeth and tonsils are the commonest sources of infection, followed by more remote possibilities such as the appendix, the gall-bladder and the prostate, or such nebulosities as " intestinal toxæmia " If the net cast is sufficiently fine the instruments of precision sufficiently sensitive and the investigation sufficiently exacting, it is possible to find some plausible abnormality in almost anybody Latent tuberculosis and thyrotoxicosis have their adherents, while extrinsic toxins such as tobacco are indicted as additional rather than primary influences As in the practice of medicine generally, the enthusiasts for focal sepsis occasionally score brilliant successes but encounter far more disappointments It is well to eradicate an obvious source of sepsis but it is the experience of most observers that the number of cases of effort syndrome which can be attributed to this cause is exceedingly small.

MUSCLE AND MIND

If properly organised, exercises have a psychological value Their character must be varied, they must be intrinsically interesting instead of mere monotonous repetitions of stereotyped movements and they must demand unremitting attention In this way it is possible to ensure half an hour's sustained activity in a man who would fall out in five minutes of the tedious procedure comprehended under the one-time P T The man who has entertained the conviction that he has a cardiac defect, or at least a constitution, which must not be subjected to the hazards of exertion may be reassured by discovering that exercise does not lead to calamity and not even, after a time, to symptoms which he had supposed to indicate " heart weakness " or " heart strain " As a member of a suitable class he will have the advantage of encouragement, competition and emulation, and may come in due course to take a pride in achievement and the cultivation of fitness At the same time it is best that he should be occupied in a useful and interesting manner for most of the day, so that he has no time for introspection or for undesirable habits which are often the consequence of boredom

Exercises serve a useful purpose in grading If a man can accomplish half an hour of systematic vigorous exertion and at the end exhibit no distress and no undue delay in deceleration of the cardiac rate, his circulatory integrity is established and there is no reason why the physical requirements of an ordinary military life should not be met But no system of exercises can test the reaction to unalluring or distasteful circumstances or guarantee that symptoms and even physical signs will not be forthcoming when escape is sought from an intolerable situation This is a psychological problem and it must be left to the psychiatrist, not to the clinical physician, to assess the individual's probable reaction to circumstances and responsibilities

It is comparatively easy to recognise the subject of post-infective debility and the under-developed type that can be improved in the manner described But the crucial problem is in respect of the fundamentally unsound is the essential fault ascertainable and eradicable or must a fatalistic view of complete failure be accepted ? Exercise is a complicated process into which enter a variety of factors, including the myocardium, the blood, the respiration, the muscles in their biochemical aspect, the nervous system and the mental outlook It is a simple but defeatist conclusion to regard the nervous as the essential factor in effort syndrome, when jerky maladjustment displaces orderly coordination In such cases, exercises, far from producing any improvement, are likely to aggravate the symptoms This applies at any rate to exercises of the usual P T type, although it has been suggested that better results might be expected by a system more minutely graduated in which encouragement would presumably play a great part

The exercise-tolerance test is often condemned as inadequate or useless, although it is not easy to ascertain what exactly the critics have in mind or what they suppose it is intended to test All that can be determined is the capacity for exertion as indicated by circulatory efficiency But nothing can test the willingness of the man, and here those responsible for the disposal of subjects of effort syndrome have an obvious difficulty A man may exercise vigorously without distress and demonstrate the integrity of his circulation, and may yet complain of various subjective sensations regular ones there must be a nearby breeding source Wasp-nests may be in the ground, among tree roots, in rat or rabbit holes, in banks, in hollow trees, or even suspended in outhouses The nest has to be located and then when all the wasps have returned at dusk, creosote or petrol is poured down and the entrance well plugged up Ants' nests under stones, steps or flag paths, or in banks and so on are treated likewise, though the common dusky brown ant is largely a nocturnal wanderer

Cockroaches and crickets can be dealt with in much the same way The noise of the cricket is its chief annoyance—a single ungetatable cricket can be as upsetting in the ward at night as an air-raid—but the cockroach may do damage by contaminating food The most effective way of controlling both is with a simple trap, made from a glass jam jar baited with cooked vegetable, banana, orange peel or meat flavoured with aniseed or beer, and fitted with an inverted cone cap of stiff smooth art paper, with sufficient space for the insect to slip through A sloping gangway or steps up to the top of the cone must also be provided The smell of the bait attracts the hunting cockroach or cricket at night, and it will slip down the cone into the jar A number of such traps can be placed in likely haunts in the evening and the captives tipped out into boiling water next morning Where kitchens or boiler houses are heavily infested with these insects, it may be better to fumigate the rooms with sulphur dioxide, by burning 2 lb of sulphur for each 1000 cu ft room and keeping the room sealed for 36 hours Poison baits for cockroaches and crickets can be made from 3 parts of sodium fluoride to 1 part pyrethrum powder, or borax and pyrethrum flavoured with castor sugar or chocolate Sprays to fetch crickets and cockroaches out of the cracks and crevices of their retreats can be made from ½ lb pyrethrum powder in 1 gallon of paraffin This is decanted and 2 oz of methyl salicylate, or acetic acid added

The house-mouse may be attracted, like cockroaches, by surplus food material, and in autumn and winter field mice and house mice are driven indoors for warmth They are probably never numerous enough to require sulphur or cyanide fumigation, and the latter in any case is best confined to outdoor rat-holes Individual traps or poison baits should be varied and numerous (ten per head of the estimated mouse or rat population) and should be placed in the most frequented haunts of the rodents, which are discovered by examining dusty pipes and corners for footmarks Bait should compete with the available food-supply Bread and cheese merely imitate the scraps which can be found in the kitchens and larders, and a more attractive bait would be minced bloater or kipper, oatmeal or rolled oats, it should not be flavoured with aniseed or it will attract cockroaches A useful bait, harmless to domestic animals, can be made from 1 part by weight of liquid extract of red squill, 2½ parts of fine oatmeal or rolled oats and 1½ parts of dripping or castor sugar, the fat is melted to mix the rest into a paste and the final product is wrapped in twists of tissue paper A useful deodorant for mice, cockroaches and the like is zinc chloride or nitrate of lead This may be either squirted into mouse-holes, or a sheet may be dipped in the solution and suspended

Buildings can be made mouse and rat proof by stopping all holes with cement reinforced with broken crockery or glass, or plugging them with a poisonous paste of barium carbonate and dripping so that the rodents are poisoned when they gnaw their way out Foundations should be set in concrete, all basement windows, drains, drain-pipes and ventilators should be covered with mesh wire, and the bottoms of outside doors should be covered with a sheet of brass or zinc to prevent rodents gnawing their way in All food bins should be of metal

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WE have now received from America the January number of the new *Journal of Clinical Endocrinology* This medical paper is being published monthly for the Association for the Study of Internal Secretions which controls *Endocrinology* The two journals will aim at being complementary, experimental work being largely segregated in the old journal and its practical applications in the new The annual subscription is $6 50 and the publisher Charles T Thomas, 220 East Monroe Street, Springfield, Illinois

CHEMOTHERAPY OF WOUNDS —In some of the systemic infections the technique of chemotherapy seems to be established, though no doubt improvements both in the choice of drug and its dosage will continue to be made In surgery, however, the possibilities of the sulphonamide drugs are only beginning to be revealed, and it is no easy task to lay down rules for their use Messrs May and Baker of Dagenham have produced a well-documented booklet in which the present position of chemotherapy in the prevention and treatment of infection in wounds is clearly explained and they will do the practitioner a useful service by keeping the booklet up to date This they clearly intend to do, for a revised edition has appeared within a few weeks of the first It is obtainable free of charge on request

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Air Commodore F C Cowtan has been appointed an honorary surgeon to the King in succession to Air Marshal Sir Victor Richardson, who has retired

The volunteer officers' decoration has been awarded to Surgeon Commander F. L Cassidi, M B Camb

An election of junior Beit fellows for medical research will be made in July The fellowships are normally of the annual value of £400 for three years, and candidates must hold a registrable medical qualification Elections are rarely made above the age of 35 The trustees wish to further research in mental disease, and preference will be given to a candidate proposing research in that subject Applications should be sent by May 14 to Prof T R Elliott, F R S, at University College Hospital Medical School, London, W C 1

Roche Products (Welwyn Garden City, Herts) have opened a branch office at 166, Buchanan Street, Glasgow, C 1

Appointments

AIREY, F S, M B Edin, M R C P E dermatological referee for Circuits 18 and 19

DICK, NANCY K, M B Lond deputy medical superintendent at South Middlesex Fever Hospital, Isleworth

HOWTS, ELLEN, M R C S temp asst to school M O and to M O H for Brighton

RIBEIRO, C O, M R C S examining factory surgeon for Knowbury, Salop

SHALDERS, GERTRUDE, L D S, D M Vienna asst dental surgeon for Ilford

STANDRING, THOMAS, M D Lond deputy M O H for Woolwich

WILSON, R S, L R C P E, D P M, L D S deputy medical superintendent at the North Wales Counties Mental Hospital, Denbigh

Birmingham City Council —The following have been appointed temp M O s for maternity and child welfare —

BEBBINGTON, EVELYN F, M B Lpool D P H,
FLEMING, MAY E M, M B Glasg, D P H, and
PENWILL, MARJORIE L, M B Lond

Births, Marriages and Deaths

BIRTHS

GRAHAM —On March 11, at Lahore, the wife of Major G K Graham, I M S —a daughter

JEREMY —On March 16, at Cambridge, the wife of Flight Lieutenant W H R Jeremy, M B, R A F V R —a daughter

MATHESON —On March 16, in Edinburgh, the wife of Dr Alister R Matheson—a son

MAYON WHITE —On March 18, at Sutton, Surrey, the wife of Dr R M Mayon White—a daughter

MEIKLE —On March 19, at Malvern, the wife of Dr Gilbert J Meikle—a son

SANTOW —At Hamilton, N S W, the wife of Dr G S Santow—a son

SARKIES —On Feb 1, at Mandalay, the wife of Capt J W R Sarkies I M S —a daughter

VAUGHAN —On March 8, at Barnard Castle, the wife of Surgeon Lieutenant Cyril Vaughan—a daughter

MARRIAGE

HENRY—BENNETT JONES —On March 22 at Liverpool Leon Henry, F R C S, to Patricia Mary Bennett Jones, M B

DEATHS

ILLIUS —On Feb 13 at Funchal, Madeira, Henry Warwick Illius C I E, F R C S E lieut colonel, I M S retd

JACKSON —On March 19, at Harrogate, Basil Frederic Forrester Jackson, M R C S, of Upper Richmond Road, Putney

MITCHELL —On March 15 in Birmingham Thomas Ellis Mitchell, L M S S A, captain R A M C, aged 34

SMYLY —On March 19, [illegible] Smyly, Kt, M D T operative measure necessary to relieve the obstruction. In Warthen's series simple release was practicable in only 37% of cases compared to our 66.5% and his total fatality was correspondingly higher, 34% to our 22.4%.

THE DANGERS OF RESECTION

In 62 out of our 670 cases part of the gut was not considered viable and a resection was carried out. 48 of these died, a fatality-rate of 77.4%. Of our 300 cases of strangulated external hernia 30 required a resection of gut and 24 of these died, a fatality-rate of 80%. Of the 270 cases in which simple release was practised only 18 died, a fatality-rate of 6.7%. Why should there be this appalling difference in the prognosis when the gut changes from viable to non-viable? It has been claimed that patients in whom a resection is necessary are already desperately ill, that they are suffering from the effects of extreme dehydration and absorption of toxins and are therefore unable to stand the effects of an operation, or that although able to stand a short operation they cannot stand the necessary gut resection. If this were so one would expect that in the vast majority of fatal cases the patient would die at any rate within a day or so of operation. In actual fact this explanation of the high fatality is entirely false. In a few of our 62 cases of resection the patient was in extremis on admission, and, in spite of efforts at resuscitation and an operation carried out as speedily as possible at what was considered to be the optimum moment, died soon afterwards. In a considerable number of cases, however, the patient was not in extremis and there were no systemic signs whatever, the discovery of non-viable gut being apparently quite unexpected. This was particularly common where the strangulated gut was outside the general peritoneal cavity—in an external hernial sac. In the majority of cases there was a moderate degree of dehydration or toxæmia but certainly not enough to render the patient unfit to stand a resection of gut, which need not cause much operative shock if certain technical details are observed. Nor does the patient necessarily die soon after operation. A certain number, of course, do die rapidly, overwhelmed by toxæmia or general peritonitis present before operation as a result of perforation of gangrenous gut. But the majority survive the immediate hazards of operation and the next few days. These may die at any time up to six weeks after operation, the commonest danger periods being about the fifth and about the tenth day. The symptoms are typical of an increasing mechanical obstruction—colicky pains, exaggerated peristalsis, vomiting and increasing distension. At autopsy the cause of death is found to be a plastic peritonitis of a variable but fatal degree, with much adhesion of gut to gut, and gut to abdominal wall, and an œdematous intestine full of foul material, with multiple sites of obstruction.

THE CAUSE OF LOCAL PERITONITIS

Were it possible to eliminate this local peritonitis the fatality of gut resections would drop considerably. It seems certain that the organisms producing it must have come from inside the gut. They may reach the peritoneal cavity before, during, or after operation. Before operation, organisms might conceivably pass through the damaged gut wall before actual gangrene had occurred, and clearly the peritoneum will be flooded with organisms if a gangrenous coil of gut lying in the peritoneal cavity perforates. At operation, however good the aseptic technique, organisms are bound to escape when the gut is opened. After operation, since only undamaged gut is left, organisms are only likely to escape if the anastomosis leaks.

It seems unlikely that in most cases fatal contamination of the peritoneum takes place before operation. Thus, in our series actual perforation was rarely found; it was only in these few cases that obvious signs of peritonitis were present and then only if the perforated gut was lying in the general peritoneal cavity. Moreover, the fatality-rate after resection of a coil of gut lying in an external hernial sac and sealed off from the general peritoneal cavity was 80%, while the mortality after resection of a coil which had been lying in the general peritoneal cavity was actually slightly less, 75%. If the passage of organisms through the gut wall was of significance one would imagine that the fatality would be much higher in cases where the gut was inside the peritoneal cavity.

Contamination of the peritoneum by leakage of the anastomosis after operation is also not of importance in the majority of cases, for at a second operation or autopsy there was asserted to be evidence of leakage in only one case in our series. The areas of plastic peritonitis, although in the region of the anastomosis in most cases, are not necessarily so, and the area around the anastomosis is sometimes free from adhesion or peritonitis, which is centred in another part of the abdomen.

Some organisms probably do pass through the gut wall before operation but not to a great extent unless gangrene and perforation have occurred; the main contamination of the peritoneum probably takes place at operation and is due to the gut being opened. In support of this view, 3 of the cases of gangrene in our series were treated by exteriorisation with the intention of performing a subsequent operation for the reconstruction of the normal intestinal tract. Of these, 2 survived, but both of them died after the second operation for closure of the fistula, the surgeon being forced to open the peritoneal cavity and the gut. If we divide our 670 cases into two groups according to whether the gut was opened or not we find that of 224 cases in which the gut was opened 137 died, a fatality of 61.2%; 68 of these were small gut, 54 dying, a fatality-rate of 79.4%; 156 were large gut, with 83 deaths, a fatality-rate of 53.2%. But of the 446 cases where only simple release was necessary 23 died, a fatality-rate of 5.2%. The prognosis in the cases requiring opening of the gut was necessarily much worse, but nevertheless the difference is so great as to suggest that opening the gut provides a new lethal factor sufficient to weigh the scales against the patient.

THE PROGNOSIS

This, then, is the prognosis of acute intestinal obstruction. If simple release can be practised the outlook is good, the fatality in our series being only 5.2%. If the gut has to be opened, either to perform an anastomosis, to drain the gut or to perform a resection, the prognosis is much worse, in our series the fatality being 53.2% in large-gut and 79.4% in small-gut obstruction. In cases requiring resection of gut the rate was 77.4%. A reduction in the deaths from acute intestinal obstruction can be attained in two ways: by earlier diagnosis and by more successful treatment and prevention of the lethal complications which result from delay in diagnosis. With a view to preventing such complications we have carried out a series of animal experiments.

Experiments with Intraperitoneal Sulphanilamide

We have employed oral chemotherapy in the treatment of postoperative peritonitis, but to our disappointment it was unsuccessful and in one or two cases even seemed to have a deleterious effect. We therefore devised experiments on rabbits with the object of ascertaining (1) whether deliberate contamination of the peritoneal cavity with the contents of the gut does in fact cause a plastic peritonitis of the kind often found in man after a resection of gut; (2) if so, whether there is one causative organism which can be recovered later from the infected peritoneum and grown in pure culture; (3) whether such a peritonitis can be prevented or modified by the local application of sulphanilamide into the peritoneal cavity; and (4) if so, whether oral sulphanilamide is as effective as intraperitoneal sulphanilamide.

FIRST EXPERIMENT

As a preliminary investigation, a suspension in saline of 300 mg of sulphanilamide per kg body-weight was injected into the peritoneal cavity of each of two rabbits, a dose equivalent to about 15 g in man. Blood was taken at intervals and its sulphanilamide content estimated. It was found that absorption was completed in 30 hours, and the drug produced no ill effects or local reaction in the peritoneum.

SECOND EXPERIMENT

The next experiment was carried out to ascertain the effect of intraperitoneal sulphanilamide on the reaction of the peritoneum of rabbits to the organisms inside their own gut. The abdomen of each of 12 rabbits was opened and intestinal contents withdrawn through a small (exhaustion, giddiness or precordial pain) either soon after or sometimes two or three hours after completing the effort

In the last war I was familiar with one of the greatest athletes in the world, capable on the running track of extreme exertion, who evaded military service by presenting symptoms and even physical signs, such as fainting, whenever military duties were demanded What attitude should be taken in such circumstances ? Psychologists maintain that to ignore complaints in the absence of physical accompaniments, and perhaps to enforce strict military discipline, is only to court the production of more and worse symptoms , but the modern medical officer has sufficient sense of duty, confidence in his clinical knowledge, and courage to take trivial risk, instead of referring all cases for special investigation More rarely the converse problem arises, that of a man who at the end of his exercise has a protracted tachycardia despite his assertion of well-being Subjectively considered, he is fit to be returned to his unit where he may well carry on , but he may report sick under stress, especially emotional stress, when objective signs will be discovered which cannot be ignored

PHYSICAL BASIS OF SYMPTOMS

Since there is often tachycardia, the influence of the thyroid is naturally invoked and in a few instances there is evidence in favour of this explanation On investigation, however, fundamental objections appear At rest, the circulation of the hyperthyroidic patient resembles that of a normal person during exercise there are tachycardia, increased cardiac output and accelerated blood flow These factors are absent in the patient with effort syndrome, and he also fails to exhibit that constant feature of the hyperthyroidic, persistence of tachycardia during sleep

Normally exercise results in a slight acidosis, a relative reduction of blood alkalinity which is the stimulus for increased respiratory effort It has been thought that the patient with effort syndrome may be hypersensitive to an acid intoxication of a degree which in a normal person will produce no respiratory distress or over-activity This might be explained by a constitutional deficiency in the buffer substances of the blood—sodium bicarbonate, sodium phosphate and proteins—which normally combine with carbon dioxide and other metabolic acids Even at rest the subject of effort syndrome may display shallow ineffective respiration He gives the impression, not of dyspnœa but of lazy breathing, of never having acquired the habit of accumulating enough CO_2 to afford the respiratory centre the necessary stimulus As would be expected, response to the breath-holding test is exceedingly poor The effects of hyperventilation in healthy subjects have naturally encouraged the expectation that some of the symptoms of effort syndrome might be explained in this way But Guttman and Jones (1940) have satisfied themselves that when patients with effort syndrome practise hyperventilation, the cardinal symptoms are produced in very few cases , no patient in their series complained of suffocation, palpitation and left-chest pain

The respiratory phenomenon of effort syndrome can only be described in general terms as an expression of disordered metabolism, possibly the result of suprarenal dysfunction The abnormal sweating has provoked speculation both on the chemical side and the relation to heat loss It is another indication of the sympathetic imbalance which characterises the syndrome and which is associated, in some instances, with vagotonia, in others with vagal insufficiency and with a general want of muscular tone especially of the abdomen The interaction of the sympathetic nervous system with the endocrines is of course familiar

To attempt to establish a uniform ætiology in cases of effort syndrome is fallacious In typical examples we recognise many of the physical accompaniments of anxiety, and the chief hope of amelioration lies with the psychotherapist whose task must be to identify the chronic emotional state—conflict, fear and the like—which may be responsible The difficulty of investigation, great enough in ordinary circumstances, is substantially enhanced by the circumstances of military service where the perpetuation of the disability is to the patient's advantage

SUMMARY

Effort syndrome is a term vaguely employed to describe a symptomatology which may arise from various causes, some of which are constitutional and ineradicable, some pathological and amenable to treatment

Exercises, combined with good food and a regular life, will benefit cases of postinfective debility or under development, but even in these their psychological value must not be overlooked

In cases of effort syndrome which seem to arise from constitutional inferiority and to have no responsible physical defect the results of physical therapy have been disappointing Their ætiology and treatment are the concern of the psychiatrist

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THE PROGNOSIS OF ACUTE INTESTINAL OBSTRUCTION

EXPERIMENTS WITH INTRAPERITONEAL SULPHANILAMIDE

BY

RUPERT VAUGHAN HUDSON,
F R C S
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RODNEY SMITH,
M B LOND , F R C S
ACTING SURGICAL REGISTRAR AT THE HOSPITAL

AND

F R SELBIE,
M D ABERD
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DURING the last twenty years important advances have been made in the treatment of many acute abdominal conditions, and fatality-rates have correspondingly fallen In acute intestinal obstruction, however, while progress has certainly been made, the fatality-rate in most published figures is still between 20% and 30% In an attempt to ascertain the factors responsible for this high figure a series of 670 consecutive cases has been analysed at this hospital, and the results have been compared with those of Burgess (1923) and Warthen (1936) because their classification is sufficiently similar to the one we have adopted

Burgess published a series of 1278 cases, with a fatality rate of 28 8% In our series the rate is 22 4% In both these series the two commonest single causes of obstruction were strangulated external hernia and carcinoma of the colon The fatality-rate of acute on chronic obstruction from carcinoma of the colon was 34 1% in Burgess's series , in our series it is 31 6% In Burgess's figures the fatality-rate of strangulated external hernia was 23% , in our series it is 14%, and the fatality-rate of all small-gut obstructions is only slightly higher, 16 7% There is, then, a great improvement in the prognosis of strangulated external hernia and of obstruction of the small gut, but very little in the prognosis of acute on chronic large-gut obstruction Of the factors responsible for the improved outlook in obstruction of the small gut probably the main one is earlier diagnosis and earlier operation Holt (1928), urging the importance of the time factor in acute obstruction, says that in his cases there was a fatality-rate of about 60% in the late cases exhibiting systemic signs Warthen found that among white patients the fatality-rate was 19 5%, while it was 42 3% in blacks, and that, on an average, the time elapsing between onset of symptoms and admission to hospital in blacks was about double that in whites

It is generally agreed that the high fatality in late cases is due to complications Is there a single complication which is sufficient to alter the entire outlook ? The complications which may arise are —

1 Dehydration and chloride loss
2 Absorption of toxins
3 Vascular damage to the gut wall, the final result of which is gangrene, perforation, and if the gut is lying in the general peritoneal cavity peritonitis

Of these, vascular damage to the gut is of vital importance because, even in the absence of gangrene, it often means that simple release of the obstructed gut is not sufficient and that further operative measures have to be taken Dehydration and toxæmia are not difficult to treat per se, provided that simple release is the sole

TABLE II—THIRD EXPERIMENT Operation resection of part of terminal ileum, ileo cæcostomy

Treatment	Rabbit no	Killed or died	Post mortem findings			
			Wound	Anastomosis	Peritonitis	
					Local	General
None	13	D in 36 hrs				+ + + (Culture *B coli*)
	14	K after 3 wks	Adherent to gut	Patent Inflamed	Abscess 1 × ½ in at blind end	+ + (Culture *B coli*)
	15	K after 3 wks	Abscess 2 × 2 in discharging through wound	Patent Much inflammation	Blind end covered with lymph, adherent to small gut	+ + A few small abscesses Gut adherent (Culture *B coli*)
	16	D in 36 hrs				+ + + (Culture *B coli*)
	17	K after 3 wks	Abscess 2 × 1 in in and behind wound	Patent but surrounded by peritonitis	Abscess ½ × ½ in round blind end with much adhesion of gut	+ + involving small gut, mesentery and omentum (Culture *B coli*)
	18	K after 3 wks	Gut adherent to abdominal wall behind wound	Patent but surrounded by peritonitis	Abscess ½ × ½ in round blind end with much adhesion round it	+ + involving small gut mesentery and omentum (Culture *B coli* and *Staph albus*)
Intraperitoneal sulphanilamide 300 mg /kg	19	K after 3 wks	Normal	Patent pin s head abscess on suture line	None at blind end	None
	20	K after 3 wks	Normal	Patent not inflamed	Inflammation round blind end (Culture *B coli*)	None
	21	K after 3 wks	Abscess 2 × 1 in in and behind wound (Culture *Staph aureus*)	Patent	Blind and adherent to wound	No general spread
	22	D in 36 hrs				+ + + (Culture *B coli*)
	23	D in 36 hrs.				+ + + (Culture *B coli*)
	24	K after 3 wks	Normal	Patent One flake of lymph on suture line	Blind end not inflamed	None (Culture sterile)

prevented or modified in the same way by intraperitoneal sulphanilamide In these experiments the animal used was again the rabbit End-to-end or side-to-side anastomosis after a resection of small gut was found to be technically difficult, owing to the extremely small size of the gut The first few rabbits in which this was the technique adopted all died rapidly of obstruction or leakage at the anastomosis Ultimately, it was found much simpler to resect several inches of terminal ileum, close the lower end, and implant the upper end into the cæcum This was our standard procedure in 12 rabbits In 6 of them the operation concluded with the intraperitoneal injection of a suspension in saline of 300 mg per kg of sulphanilamide The other 6 received no sulphanilamide After three weeks all the surviving rabbits were killed and a note was made of the signs of inflammation in the wound, at the anastomosis, at the blind end and in the general peritoneal cavity Cultures were taken from each case

Of the 12 rabbits 4 died within 36 hours of operation of general peritonitis, the *B coli* alone being grown from the peritoneum in every case, 2 had received sulphanilamide, 2 had not The remaining untreated rabbits (4) developed inflammation in the wound, at the anastomosis and at the blind end, as well as widespread peritonitis It was remarkable to note the degree of peritonitis compatible with survival in the rabbit, the organism in every case was the *B coli* Of the 4 surviving rabbits treated with sulphanilamide 2 had insignificant local lesions and nothing else in 1 there was considerable inflammation round the blind end of the ileum, from which region *B coli* was grown, and one had a large abscess posterior to the wound, giving a growth of *Staph aureus* In none of these 4 was there any general peritoneal spread These results are shown in table II

We next tried to assess the value of intraperitoneal sulphanilamide when a coil of strangulated and gangrenous gut is resected Strangulation with gangrene was easily produced in rabbits by bringing a coil of gut through the linea alba, closing the incision round the gut and suturing the skin over it Unfortunately, the subsequent resection of the gut proved to be far more lethal than we had hoped Only one of many operated on survived more than 24 hours It is noteworthy, however that this rabbit, which received no sulphanilamide, lived for 9 days and died of *B coli* peritonitis with many adhesions and several sites of obstruction. The high fatality in rabbits suggests that further experiments on these lines might usefully be performed on animals better able to stand the immediate hazards of operation Nevertheless granted that the bacterial content in strangulated gut is higher and the organisms are more virulent than in normal gut, they are the same organisms and cause the same type of peritonitis It follows that any prophylactic measure which will prevent or modify *B coli* peritonitis after resection in the absence of gangrene will have a similar value in cases of resection of gangrenous gut

CASE-RECORDS

During the course of these experiments we had the opportunity of using intraperitoneal sulphanilamide in 2 cases in which a resection of small gut for acute obstruction was necessary

CASE 1 —A man of 67 was admitted with signs, symptoms and radiological evidence of acute obstruction of the terminal ileum Operation by one of us (R S) revealed a new growth which had almost obliterated the lumen of the gut Resection of 11 in of ileum was followed by the performance of an end to side anastomosis with an ileostomy just proximal, and 10 g of sulphanilamide suspended in saline was left in the peritoneal cavity Postoperatively continuous gastric suction ensured that depression of peristalsis should not lead to distension of the gut Convalescence was complicated by the development of *B coli* abscess in the wound, but from the first day the physical signs and symptoms, the study of the fluid balance chart and routine straight radiograms of the abdomen demonstrated that the anastomosis was patent and that there was no hold up anywhere along the small gut Five weeks after operation the patient died suddenly from a massive hæmatemesis from an œsophageal varix caused by puncture in the cæcum Although we were primarily interested in the organisms in the small gut, contents were withdrawn from the cæcum because the small gut was nearly always found at operation to be empty, and it was not considered probable that the organisms living just distal to the ileo-cæcal valve would differ from those just proximal Moreover, the puncture in the cæcum could be easily closed, while the lumen of the small gut was so small that it was feared that any attempt to make certain that the puncture did not leak after operation would result in undue narrowing of the gut The puncture was closed with a fine catgut purse-string suture and the intestinal contents withdrawn were then injected into the right half of the peritoneal cavity, from the right hypochondrium to the right iliac fossa In 3 of the rabbits the abdomen was then closed In 6 others, before closing the abdomen, a suspension in saline of 300 mg of sulphanilamide per kg body-weight was injected into the peritoneal cavity In 3 others the abdomen was closed and the rabbit was then given the same dosage of sulphanilamide through a stomach-tube After a week each rabbit was killed and the abdomen opened and examined The findings are summarised in the table

CONTROLS, NO SULPHANILAMIDE

Rabbit No 1—Gut adherent to anterior abdominal wall at site of the puncture, over area ½ in × ½ in Abscess ½ in × 1 in in right flank, at this point large gut was adherent to small with kinking of the latter and gut was adherent to anterior abdominal wall over area 2 in × 1 in

No 2—Gut not adherent to abdominal wall At site of puncture, not in contact with abdominal wall, there was an abscess 1 in × 1½ in from which had spread a local peritonitis involving several coils of gut over area of 3½ in × 2½ in Multiple small abscesses on posterior surface of anterior abdominal wall, from right iliac fossa to right hypochondrium Under pylorus large gut adherent to small with small abscess Scattered flakes of lymph throughout left side of abdomen Injection of mesentery of whole of small gut

No 3—Gut adherent to abdominal wall over site of puncture with localised abscess 2 in × 1 in Small localised abscesses in liver Abscesses throughout abdomen, localised by adherent coils of gut and mesentery Injection of whole peritoneum—general peritonitis

INTRAPERITONEAL SULPHANILAMIDE

No 4—Localised peritonitis, ½ in × ½ in around site of puncture, where gut was adherent to anterior abdominal wall No spread outside immediate locality of puncture

No 5—No adherence of gut to anterior abdominal wall, but abscess ¼ in × ¼ in on surface of gut at site of puncture and abscess ¼ in × ½ in on posterior surface of anterior abdominal wall under incision Some injection of pelvic peritoneum but no adhesion A few tiny flakes of lymph on posterior surface of anterior abdominal wall on right side, and two small flakes on anterior surface of left lobe of liver

No 6—Gut adherent to abdominal wall at site of puncture *over area 1 in × ¾ in No abscesses, no lymph, no* adhesion of gut to gut and no peritonitis

No 7—Gut adherent to abdominal wall at site of puncture where an abscess ¾ in × ½ in was surrounded by zone of local peritonitis 1 in × 1¼ in Mesentery of a coil of gut in this zone rather injected Elsewhere no peritonitis, no adhesions and no abscesses

No 8—Gut not adherent to abdominal wall, but under incision there was an abscess ¼ in × ¼ in which had discharged through wound At site of puncture very slight reaction and piece of catgut still undissolved, mesentery of one coil of small gut in contact with this rather injected, but no adhesion there or elsewhere and no distant abscesses or peritonitis

No 9—No adhesion of gut to abdominal wall Inflammatory reaction on posterior surface of anterior abdominal wall under incision and at site of puncture, where localised peritonitis ¼ in × ¼ in Nothing else abnormal found

ORAL SULPHANILAMIDE

No 10—Gut adherent to abdominal wall over site of puncture No abscess there, but much adherence of gut to gut with nodules of lymph Many distant small abscesses with obstructive adhesions and peritonitis Whole of small gut and its mesentery injected

No 11—Gut adherent to abdominal wall over area 1 in × ¾ in and small gut adherent to large and obstructed in this area Injection of mesentery of this coil of small gut A few scattered small abscesses elsewhere, and in region of pylorus gut firmly adherent to gut with much injection of mesentery of small gut

No 12—Obvious general peritonitis and intestinal obstruction Multiple small abscesses ¼ in × ¼ in connected by strings of mucopus across general peritoneal cavity Gross dilatation of one coil of gut which was deep purple

TABLE I SECOND EXPERIMENT

FINDINGS AT AUTOPSY A WEEK AFTER PUNCTURE AND CLOSURE OF CÆCUM AND SOILING OF RIGHT SIDE OF ABDOMINAL CAVITY WITH CÆCAL CONTENTS

Treatment	Rabbit no	Lesions at site of puncture into cæcum		Lesions in or under incision		Lesions elsewhere in peritoneal cavity			
						Localised			Evidence of spread to general peritoneal cavity
		Abs	Ad	Abs	Ad	Abs	Ad	Obs	
None	1	−	+	−	+	++	++	−	Injection of mesentery of small gut
	2	++	−	−	−	++	+	−	
	3	++	++	++	++	++	+	−	General peritonitis
Intraperitoneal sulphanilamide 300 mg /kg	4	−	+	−	+	−	−	−	None
	5	+	−	+	−	−	−	−	None
	6	−	+	−	−	−	−	−	None
	7	+	+	−	−	−	−	−	None
	8	−	−	+	−	−	−	−	None
	9	−	−	−	−	−	−	−	None
Oral sulphanilamide 300 mg /kg	10	−	++	−	++	++	++	+	Injection of mesentery of small gut
	11	−	++	−	++	++	++	+	
	12	+	+	+	+	++	++	++	General peritonitis

Abs = abscess, Ad = adhesion Obs = obstruction

The only organism which could be grown from the abscesses or from the peritoneal fluid was a pure culture of *Bacillus coli*

CONCLUSIONS FROM SECOND EXPERIMENT

The conclusions which may be drawn from these experiments are —

(1) Liberation of intestinal contents into the peritoneal cavity of a rabbit is followed by the development of a plastic peritonitis, the causative organism of which is the *B coli* It is characterised by abscesses and areas of adhesion of gut to gut and gut to abdominal wall which may produce intestinal obstruction If localisation is poor general peritonitis may result The post-mortem finding in the rabbit exactly parallels the findings at operation or autopsy on patients with peritonitis

(2) The injection of sulphanilamide into the peritoneal cavity at the same time as the contamination with intestinal contents prevents the development of this *peritonitis, the pathological* changes in the rabbits so treated being limited to a localised reaction in the immediate vicinity of the puncture in the gut and the abdominal incision

(3) The administration of sulphanilamide by mouth in one dose of 300 mg per kg body-weight at the time of operation has no effect on the development of this peritonitis

The experiments described deal only with contamination of the peritoneum with gut contents in the absence of intestinal obstruction We have pointed out that if the gut has to be opened at an operation for acute intestinal obstruction the prognosis is very poor, because there is a great probability that a type of fatal peritonitis will develop which is an exact parallel to that we have produced experimentally in the absence of obstruction It seems likely that the prognosis in this type of case may be considerably improved by the use of intraperitoneal sulphanilamide, while the not uncommon complication of an abscess in the wound may be rendered less likely by the use of sulphanilamide implanted in the deeper layers of the incision

THIRD EXPERIMENT

It remained to be seen whether this *B coli* peritonitis did in fact occur frequently after a gut resection in an experimental animal, and if so whether it could be

TREATMENT OF BACTERIAL ENDOCARDITIS WITH HEPARIN AND SULPHAPYRIDINE

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Kelson and White in America (1939) seem to have been the first to suggest and use heparin to reduce the coagulability of the blood in infective endocarditis, their aim being to prevent deposition of fibrin on the vegetations on the heart valves, and thus to deprive the organisms of the defence offered by it; they also suggested the use of sulphapyridine to augment the antibacterial power of the blood. Cases submitted to this treatment have been described by Friedmann and others (1939) in America and by Witts (1940) and Fletcher (1940) in England.

TECHNIQUE

Two cases were treated; in one heparin infusion was given on two occasions. Sulphapyridine was given before the commencement of the heparin infusion in both; in one it was given concurrently with the heparin. Dosage started with 2 g., thereafter 1 g. was given four-hourly for four days, 1 g. four times daily for four days and 1 g. thrice daily for two days. Heparin was employed in the form of Liquemin (Roche) in solution of 5 mg. per c.cm. Blood-coagulation time was measured by the method of Lee and White, as described by Whitby and Britten (1937). The patient's leg was fixed in a Thomas splint, a gold cannula tied into the internal saphenous vein with silk ligature, and the drip infusion started with normal saline. Not more than 1½ litres of fluid was given by the drip per day. The rate of 42 c.cm. per hour can be maintained by regulating a Baxter drip at about 16 drops per minute. The heparin is added in solution to the normal saline in the flask. In this way the number of mg. of heparin per hour can readily be adjusted without altering the rate of the drip, and the clotting-time closely watched; this was observed three or four times during the 24 hours. Heparin, 15–20 mg. per hour, was found to raise the clotting-time to many times its resting value in one case; in the other it only doubled or trebled it. It seems sufficient to raise the clotting-time to half an hour, though some workers recommend an hour or more. The treatment should be carried on for 10–14 days. Among the technical difficulties is that of maintaining a constant slow rate of drip. This may need to be regulated at least every ¼ hour, and for this the coöperation of the nursing staff is essential. Because of its antihæmorrhagic properties vitamin C in the form of ascorbic acid 50 mg. thrice daily was given throughout.

CASE-HISTORIES

Case 1.—A moulder, aged 28, was admitted to hospital on July 9, 1940. He gave a history of influenza three weeks previously and being in bed since, with weakness, malaise and sweating particularly at night; past illnesses included "rheumatics" at 15 years and 3–5 attacks of influenza. He was pale, with a peculiar yellow tinge in his face; skin warm and moist; rather wasted; temperature 100.5° F.; pulse-rate 120, regular, Corrigan type; clubbing of fingers with increased curvature of nails. On July 10 his urine contained albumin and urobilin, a few pus cells and red cells; no organisms. On July 12 he was seen to have petechiæ under the nails and on the abdomen; intermittent temperature between 98° and 102° F. Spleen not palpable, but splenic dullness increased in area. Heart enlarged to the left; localised presystolic mitral murmur, and pulmonary second sound accentuated. Blood-pressure 130/70. The second sound soon became reduplicated in the mitral area and later a diastolic murmur appeared outside the apex-beat. On the 22nd his presystolic murmur had spread towards the tricuspid valve and there was an added systolic murmur at the apex. Blood count on July 12 gave red cells 3,200,000; Hb. 56%; white cells 18,600; polymorphs 82%. Blood-cultures on July 10 and 15 gave short chained gram positive streptococci showing neither α nor β hæmolysis.

A ten-day course of sulphapyridine was begun on July 15; his temperature came down and remained below 99° F. until the 22nd. Pulse varied between 80 and 120, averaging about 100. On July 19 blood-culture was still positive. A course of ascorbic acid was begun on July 22, and the intravenous heparin drip set up. Blood-coagulation time before this treatment was 5¾ min. In the first 24 hours he received 1 litre of saline, and about 230 mg. heparin (about 10 mg. per hour). Blood-coagulation varied between 6 and 6½ min. The temperature rose to between 100° and 101° F. on the 22nd, and next day to 104.3° F.; pulse-rate rose to 160 and he developed a dry, painful, irritating cough with pain in right chest. A pulmonary embolism was diagnosed, but in spite of this the treatment was continued, and in the next 18 hours about 360 mg. of heparin was given (about 20 mg. per hour). The clotting time rose to 8½ min. and later to 10 min. On the morning of the 24th the patient was seized with acute œdema of the lungs and died.

Autopsy.—Numerous white infarcts in spleen and kidneys. No microscopic evidence of nephritis. Embolus in right pulmonary artery and severe œdema of right lung; microscopically, the lungs showed œdema and heart-failure cells. Brain normal. Liver friable and brownish-yellow; microscopically, the liver cells were degenerate and the whole liver infiltrated with round cells, largely periportal in distribution. Heart showed vegetations on mitral and tricuspid valves; mitral valve stenosed. Vegetations small, brownish and friable, and not abundant; microscopically, fibrosis at base of vegetations, some fibrin on the surface; no organisms seen. Urine: no red cells or casts; film showed scanty streptococci.

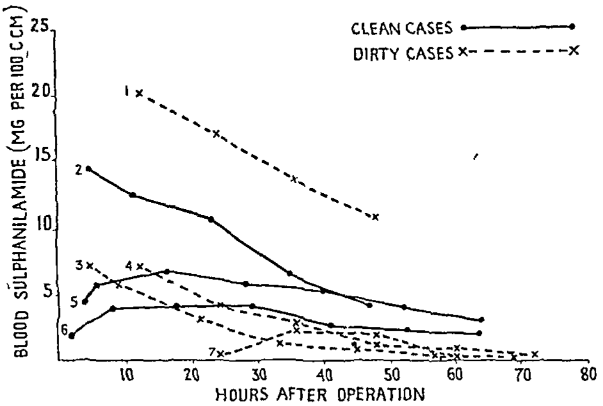
Case 2.—A man admitted on June 15, 1940, complaining of tiredness, malaise and sweats. He gave a history of "influenza" in March with lassitude and pains in the legs, and was in bed for a month. Returned to work (as a turner) for a week but had not been well since. Before admission had œdema of his ankles but no dyspnœa. He was a well-built man but had recently lost weight; yellowish tinge to skin; no Osler's nodes; no clubbing of fingers. Slight œdema of ankles present which soon disappeared. Purpuric spots on legs which faded in a week. The temperature irregularly intermittent from 97°–99° F. to 100°–102° F. Pulse-rate varied between 80 and 100; regular, full and collapsing. Liver and spleen never palpable. On July 2 he had a sudden severe attack of pain over the splenic area and a friction rub developed. The heart was normal in size. At first there was a loud systolic murmur at the apex transmitted outwards and the pulmonary second sound was accentuated. On June 27 a localised mitral presystolic murmur was added and later this became generalised. Urine: heavy albuminuria every day; film showed numerous casts and red cells; deposit contained streptococci, hyaline and granular casts. Blood-urea 50 mg. per 100 c.cm.; urea clearance low normal. Blood-picture showed a slowly progressive normochromic anæmia, and a polymorphonuclear leucocytosis. Blood-culture: several positive cultures obtained of a gram positive non-capsulated, non motile, short-chain streptococcus giving neither α nor β hæmolysis on blood-agar.

On July 3 a ten-day course of sulphapyridine was begun. Within 24 hours the temperature was normal, but on the night of the 10th it rose to 102.2° F. Blood-culture was positive on July 4; on the 11th a course of vitamin C was begun. The intravenous heparin drip was set up on July 12; clotting-time then 4½ min. In the first 20 hours patient received less than ¾ pint of saline and 100–120 mg. heparin (5–6 mg. per hour). The clotting time was 9, 10 and 9½ min. at various times that day. The rate of the drip was then doubled, giving about 1 litre of saline in the next 24 hours, and 10–12 mg. heparin per hour. As the clotting time was still only 10 min. the heparin was increased to 16 mg. per hour in the evening of the second day. This rate was maintained for the next 36 hours, and on July 14 clotting-time was longer than 5 hours. All this time the patient appeared better, with a pulse rate between 80 and 100. The first two days his temperature was normal; on the third day it rose to 101° F., and on the fourth he had a rigor and it went up to 103° F. Soon air-hunger developed, then coma and in 2–3 hours a left hemiplegia was found. Treatment was discontinued after 72 hours. The patient regained consciousness, but developed œdema of his ankles. This increased and spread to legs, face and back. Urine still contained red cells and streptococci. The hemiplegia gradually passed away, and by July 30 muscular power was almost normal, but the mitral presystolic murmur became diffuse and pulse-rate averaged 100. The intravenous heparin drip was recommenced on July 31 and sulphapyridine given concurrently. Vitamin C was given as before. Blood-coagulation time before treatment was 3 min.

back pressure from secondaries in the liver, and at autopsy the line of anastomosis was already nearly invisible and there was no evidence of past or present peritonitis or adhesion

CASE 2 —A woman of 62 was admitted with a strangulated femoral hernia of 30 hours' duration, vomiting, distended, but with only moderate signs of toxæmia Operation (R S) disclosed 2 in of gangrenous terminal ileum Resection and side to side anastomosis with a proximal ileostomy were performed through a paramedian incision and 15 g of sulphanilamide was inserted, 5 g powdered around the anastomosis and ileostomy, 2 g into the deeper layers of the wounds, and 8 g suspended in saline in the peritoneal cavity Postoperatively, continuous gastric suction was again employed, and a high concentration of blood sulphanilamide was maintained by the postoperative administration first into an intravenous drip and later by intramuscular injection of sulphapyridine After 8 days the physical signs, the fluid balance chart, and straight radiography showed that there was no hold up at the anastomosis or elsewhere, and the ileostomy drainage for 24 hours diminished to 3 oz Gastric suction was stopped and the ileostomy tube was removed The patient was transferred to a convalescent home with both wounds firmly healed 13 days after operation

It is unwise to draw conclusions from only 2 cases, but we do feel that it is encouraging that the first patients treated with intraperitoneal sulphanilamide should escape completely the peritonitis which we know is so common



Sulphanilamide, used as described above, constitutes a prophylactic but not a therapeutic measure We do not yet know whether or not it can have a therapeutic action in cases of established peritonitis We have, however, used intraperitoneal sulphanilamide in a number of cases other than acute obstruction with the object both of assessing a possible therapeutic value and of investigating the effect on the concentration in the blood of sulphanilamide The following cases were treated by the injection of sulphanilamide into the peritoneal cavity at the conclusion of operation —

1 Pancreatic abscess, drained by a tube through the gastro colic omentum and traversing the peritoneal cavity (organism, *B coli*)

2 Perforated appendix with free pus in the peritoneal cavity (organism, *B coli*)

3 Appendix abscess, poorly localised, with free pus in the peritoneal cavity (organism *B coli*)

4 Perforated gastric ulcer of 19 hours' duration, with considerable contamination of the peritoneum by gastric contents

Uneventful recovery followed in 3 cases The patient with the pancreatic abscess died, this was not remarkable since prior to surgery she was also contending with portal pyæmia, diabetic coma with renal failure, and bilateral bronchopneumonia, at autopsy she was found to have severe mitral stenosis In each case the blood sulphanilamide was estimated after the operation at intervals up to 72 hours

In order to compare the rate of absorption from normal peritoneum, sulphanilamide was introduced at operation into the peritoneal cavity in the following clean cases —

1 Strangulated hernia without gangrene

2 Partial gastrectomy

3 Cholecystectomy

The dose in every case except one was 10 g suspended in saline, the case with the pancreatic abscess was given 15 g The figure shows the levels of blood sulphanilamide in these 7 cases from the time of operation up to 72 hours The rate of absorption varied considerably from case to case, but there was no obvious difference between the absorption in clean and contaminated cases

SUMMARY

Analysis of 670 consecutive cases of acute intestinal obstruction showed that the fatality-rate in cases where simple release could be practised was 6 7%, whereas the rate was 77 4% when resection was necessary

The high fatality in cases in which the gut has to be opened, whether for resection, anastomosis or enterostomy, is mainly attributed to a postoperative plastic peritonitis leading to mechanical obstruction

The causative organism of this plastic peritonitis is the *B coli* and the peritoneum is infected by contamination with gut contents when the gut is opened at operation

Experiments with rabbits demonstrated (1) that sulphanilamide introduced into the peritoneal cavity was well absorbed and caused no local inflammatory reaction, (2) that contamination of the peritoneal cavity with contents of the cæcum produced a plastic peritonitis with the formation of abscesses and adhesions, and sometimes general peritonitis, (3) that this plastic peritonitis could be prevented by introducing sulphanilamide into the peritoneal cavity at the time of the contamination, but not by a single large dose of sulphanilamide given at that time by mouth

Further experiments with rabbits showed (4) that *B coli* peritonitis followed resection of gut with great regularity, (5) that prophylactic use of intraperitoneal sulphanilamide usually reduced, and in some cases even eliminated, the inflammatory process, but (6) that in the presence of a fulminating infection intraperitoneal sulphanilamide in the doses which we employed was valueless

So far 2 cases of resection of gut for acute intestinal obstruction in man have been treated with intraperitoneal sulphanilamide In neither of these was there any postoperative obstruction or peritonitis, local or general

Our thanks are due to Prof James McIntosh for providing us with the facilities to carry out these experiments in the Bland Sutton Institute of the Middlesex Hospital, as well as for his counsel and interest

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PRESERVATION OF BLOOD FOR SUGAR ANALYSIS

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Dr E J King and his colleagues have lately described a simple method for preventing glycolysis (*Lancet*, March 8, 1941, p 310) For those who use the common Folin-Wu method or modifications the following is of interest and value as preservation is ensured without any extra solutions or manipulations After the collection of 0 1 or 0 2 ml of blood into water and the usual precipitation of proteins by 2/3N H_2SO_4 and 10% sodium tungstate, the resultant mixture can be left safely up to a week at room temperature without any change in sugar content, which is often very convenient in war-time delays The following figures show this

	Sugar mg per 100 ml in	
Days	Sample 1	Sample 2
1	218	69
3	206	72
5	215	72
7	206	61

These figures show minor variations of no practical magnitude which are due to war-time difficulties with heating apparatus I have found that the preservation of sugar in whole blood by fluoride is shorter and lasts only 2–3 days

I wish to express my thanks to Mr H R Millar for these estimations

were estimated twice daily, subsequently they were estimated daily These clotting times and the dosage of heparin for each period between estimations are given in the table It will be seen that the clotting time remained at or above four times its normal value except on the 5th day, when the vein through which the heparin was being given became occluded and the infusion was stopped for a few hours On the 12th day the patient complained of slight headache and mistiness of vision in the left eye The next day this was worse, and on the morning of the 14th day she rapidly became comatose and died The heparin infusion was stopped 6 hours before death Throughout the period of treatment the patient's temperature swung between 99° and 101° F There were no rigors

Date in Dec 1940	Dose of heparin (mg per hr)	Clotting time (min)	Date in Dec 1940	Dose of heparin (mg per hr)	Clotting time (min)
3		6¼	9	8 3	9
4		6¼	10	7	28
5 A M.	4	8¼	11	7 8	25
5 P M	8	28	12	13	48
6 A M	10	77	13	13	50
6 P M	10	50	14	10	31
7	6 7	55	16	11 3	50
8	9 2	31	17	12 5	51

At autopsy there were small bilateral pleural effusions, the lungs were œdematous with some hypostatic pneumonia There was a small pericardial effusion, the heart weighed 390 g and was dilated on the right side There was slight stenosis of the tricuspid valve with no vegetations, the mitral orifice was narrowed by old rheumatic infection There were numerous large friable vegetations on the valve surface, the chordæ, and the wall of the left auricle The left ventricle and aortic valves showed no change The spleen weighed 616 g and showed old and recent infarcts The kidneys contained a number of old infarcts The brain showed an extensive subdural hæmorrhage on the right side, evidence of old subarachnoid hæmorrhage, and a mass of blood clot exuding from the right occipital pole which arose from a hæmorrhagic cavity in the white matter There were also a few cortical hæmorrhages in this region There were no other gross abnormalities

Microscopically, the mitral valve and auricular endocardium presented the typical appearances of subacute bacterial endocarditis and differed in no recognisable way from those seen in untreated cases There was evidence of old rheumatic scarring in the myocardium and valves The mitral valve was vascularised, and on the auricular surface near the point of closure there were bacterial vegetations covered with a fibrin thrombus and lying on a granulation-tissue base Much of the fibrin appeared to be of recent deposition In the brain, near the hæmorrhage, there was considerable proliferation of the capillary endothelium, and ring hæmorrhages but no thrombi were detected

SUMMARY

Heparin treatment of subacute infective endocarditis carries with it a risk of cerebral and other vascular accidents

A case is reported in which heparinisation was adequately maintained for 14 days, the patient then dying of cerebral hæmorrhage

At autopsy the vegetations in the heart were in no way different from those seen in untreated cases There were recent depositions of fibrin and no signs of healing It may be concluded that the heparin treatment of subacute bacterial endocarditis is both dangerous and ineffective

I wish to thank Prof L J Witts for his advice and his permission to publish this case, and Dr A H T Robb Smith for his report of the autopsy

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CALCIFICATION IN MUSCLES OF FOREARM

By **Ralph Shackman**, M B Lond, F R C S
SURGEON, MINISTRY OF PENSIONS WAR EMERGENCY SCHEME, FIRST ASSISTANT IN THE DEPARTMENT OF SURGERY, BRITISH POSTGRADUATE MEDICAL SCHOOL, AND

C J Longland, M B Lond, F R C S
JUNIOR SURGEON, MINISTRY OF PENSIONS SCHEME

In October, 1917, a patient sustained a severe gunshot wound of the right upper arm, much of the deltoid muscle was torn away and the humerus was fractured at this level He was lying out in the field for two days before he was brought to a casualty clearing station where the wound was cleaned up, the arm splinted on a hinged wooden elbow-splint with the elbow flexed to 90°, and the arm bandaged to the side of the chest After about a week an operation was carried out on the wound, and a plaster was applied from the knuckles to the middle of the upper arm, with the elbow flexed to a right angle This plaster was applied (the patient says) because the wrist had dropped during the week immediately following the accident He remembered no pain, swelling or numbness of the forearm or hand but, as he says, he was so ill during the first week that the statement has little value The gunshot wound became infected and two years later was still discharging pus, while the patient himself showed evidence of amyloid disease By the end of the third year the wound had healed satisfactorily with union of the humerus, shoulder movements were improving, elbow movements were returning, but pronation and supination of the forearm were almost absent and the wrist was fixed in flexion Some finger movements were possible In 1922 the electrical reactions showed no response to faradic stimulation of the dorsal interosseous nerve, but the median and ulnar nerves responded normally A radiogram of the wrist showed no abnormality

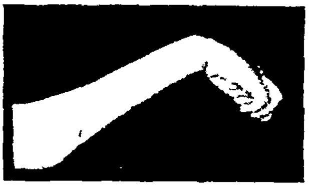

FIG 1—Position of wrist and fingers

We saw him in July, 1940, when he was a healthy man, aged 47 years, working as a cycle engineer He complained of a recent attack of pain in the right forearm The scar of the upper arm was soundly healed and was not tender or abnormal The forearm was considerably wasted, and the skin of the back of the wrist and hand was thin and shiny The shoulder could be abducted against gravity to beyond a right angle despite great loss of the deltoid muscle The elbow could be flexed and extended powerfully over a range of 45° to 135° The forearm was held in a position midway between supination and pronation, and only about 10° of supination was possible Some small hard nodules were felt among the wasted muscles of the forearm, but the majority of the calcified tissue shown in a radiogram was impalpable The brachio-radialis muscle acted powerfully The wrist was held flexed at 80° (fig 1) and could be further flexed passively for a few degrees No extension of the wrist was possible All metacarpophalangeal joints were extended and held straight except the fourth, which was hyperextended The interphalangeal joints were all flexed The middle finger was strongly flexed The thumb was held straight and adducted Slight active flexion of all the fingers was possible and the forearm muscles could be seen contracting when this was carried out No extension of the fingers was possible, and no flexion or extension of the thumb Adduction and abduction were present in the fingers There was no anæsthesia to light touch in the forearm and hand The radial, brachial and axillary arteries pulsated normally, but the right hand was obviously colder than the left and its temperature was 22° C as opposed to 29° C of the left hand (room temperature 14° C) Faradic stimulation of the median and ulnar nerves at the elbow gave normal reactions in the flexor muscles, but there was no response to faradic stimulation of the posterior interosseous nerve

The drip was begun at 10 mg in 42 c cm of saline per hour Two hours later the temperature rose from 101° to 104° F and the patient had a rigor lasting an hour The clotting-time varied between 9, 11½ and 9½ min that day, the temperature remained up at 102° F Next day the patient seemed better, and his facial œdema disappeared The coagulation-time remained at about 10 min that day, and the heparin was then increased to 20 mg per hour His urine still contained red cells and streptococci Blood count red cells 2,200,000, Hb 40% Blood transfusion of 1 pint was given the next day The clotting time was then 21½ min, patient was visibly improving, presystolic murmur again localised, blood-culture still positive, heparin maintained at 20 mg per hour On Aug 3 condition the same, but the clotting time fell to 10 min and later rose to 14 min That evening there was a sudden change, coma came on rapidly, eyelids and right arm twitched and he died later that night The course of treatment lasted 80 hours

Autopsy —Heart of normal size, fibrous stenosis of mitral valve Small brownish vegetations attached to cusps on ventricular surface near free border of valves also attached to chordæ tendineæ, but endocardium not involved, and major area of valves free Microscopically, vegetations showed fibrosis at their bases, some fibrin near surface, and numerous streptococci in deeper layers of fibrin Lungs free fluid in both pleural sacs, pulmonary œdema and brown induration present, microscopically, alveolar walls congested and alveolar spaces full in many places with red cells and heart failure cells Liver normal in size, colour and consistence, microscopically, cloudy swelling and degeneration of liver cells with some leucocytic and round cell infiltration between liver cells Spleen enlarged to three times normal size, two large, white infarcts near surface, microscopically, congested otherwise structure normal Kidneys, both enlarged and somewhat pale; typically "flea bitten", microscopically, diffuse glomerulonephritis showing glomeruli in subacute and chronic stages of inflammation, but none in acute hæmorrhagic stage, in the lumina of tubules red cells present, and in others hyaline casts Brain large area of softening involving under surface of right occipital lobe, superior temporal lobe, and internal capsule, no hæmorrhage, no embolus found, microscopically, degenerated area infiltrated with pus cells and round cells near cortical surface

DISCUSSION

Outstanding features of these two cases are the deaths of both patients from embolism, in one pulmonary and the other cerebral, the rapid clinical improvement in case 2 during both courses of treatment before the embolism, and the appearance of the valvular vegetations, which were much smaller than is usual and contained less fibrin In case 1 no organisms were seen microscopically on the vegetations Neither case underwent a full 10–14 day course of treatment, had this been possible the results might have been different The treatment is undoubtedly highly dangerous, Kelson and White, and Witts and Fletcher have reported cerebral accidents similar to those in the two cases reported here The treatment nevertheless seems justifiable for what is invariably a fatal disease

I wish to thank Dr S C Dyke and Dr M B Baines for permission to publish these cases Dr Dyke also helped me in the treatment of the cases and in drawing up this report

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SENSITIVITY TO CARROTS —Now that carrots are to take a more prominent place in our dietary, whether as a vegetable or as a diluent for marmalade, we may hear more of them as an occupational hazard H R Vickers (*Brit J Derm* February, 1941, p 52) reports seven cases of dermatitis in girls employed in the canning of carrots Sensitisation did not develop until they had been handling raw carrots for some time Vickers did not identify the responsible constituent, but he decided that it was not the essential oil Thus another substance has been added to the ever-growing list of skin sensitisers

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FAILURE OF HEPARIN IN SUBACUTE BACTERIAL ENDOCARDITIS

BY C M FLETCHER, M B Camb
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SINCE Kelson and White (1939) first described the treatment of subacute bacterial endocarditis with sulphapyridine and heparin several other cases treated by their method have been recorded

Witts (1940), Fletcher (1940) and Miller (1940) have reported cases which died of cerebral hæmorrhage during the treatment Petch (1940) reported 2 such cases and 1 dying of toxic jaundice Sevitt (1941) treated 2 cases which died of embolism (pulmonary and cerebral) during the treatment Klieber (1940) reported a case in which treatment had to be stopped owing to hæmaturia The only successful cases were 1 of Petch's (well for six months) and 1 of Weeks's (1940), but in the latter the diagnosis was not proved Thus it is clear that treatment with heparin carries with it a serious risk of cerebral and other vascular accidents, and it was in view of this that I suggested (Fletcher 1940) that it should only be given to cases in which there were no embolic signs

Swain (1940) suggested that, before heparinisation is embarked on, the infecting organism should be shown to be susceptible to chemotherapy in vitro If, however, heparin acts in the way postulated by Kelson and White it should be effective in the absence of sulphapyridine, for the blood of patients suffering from subacute bacterial endocarditis is known to be rich in antibodies to the infecting organism, if heparin can abolish the bacterial breeding ground the patient's blood should be capable of dealing with the circulating bacteria The essential question is whether heparin, given intravenously for 14 days in dosage sufficient to prolong the clotting time by four or five times its usual length, does or does not inhibit the formation of vegetations on the valves of the heart This information has been provided recently by a case treated with heparin alone, in which the patient died on the 14th day of heparinisation It was thus possible to observe the valves at the completion of treatment

CASE-HISTORY

A housewife, aged 40, had had rheumatic heart disease in childhood She had coryza and a dental extraction 4 months before admission and since that time had felt unwell, 3 months before admission she found herself feverish At this time she noticed painful spots at the tips of her fingers for a few days, became breathless on slight exertion, and had some swelling of her ankles From that time until her admission she remained in bed, being continuously febrile but not feeling particularly unwell

When examined on Nov 19, 1940, she was pale and slightly sallow She had many flat pigmented spots all over her body, some of which she said had been present since childhood, but some she thought had appeared since her present illness No recent petechiæ were seen on this or any subsequent occasion There was clubbing of the fingers and a palpable spleen Cardiac enlargement was moderate, murmurs indicating mitral stenosis and aortic regurgitation were present Blood count red cells 3,130,000, Hb 60%, white cells 5800 No red cells were found in the urine Blood culture showed a *Streptococcus viridans*, this organism was tested for susceptibility to sulphapyridine and sulphathiazole by Mr R L Vollum, D Phil, who found that it grew readily in blood when a concentration of 50 mg per 100 c cm of either substance was present

In view of her good general condition and absence of embolic signs the patient was considered to be suitable for heparin therapy Since her infecting organism was not susceptible to chemotherapy it was decided to try heparin alone Liquemin (Roche) was used The powder was dissolved in normal saline in a strength of 1 mg per c cm This standard solution was then diluted with normal saline for the actual infusion according to the needs of the patient The total volume of saline given daily was restricted to 1 litre The infusion was started on Dec 4 and was continued for 14 days Throughout this period 300 mg of ascorbic acid was given daily after an initial course of 1000 mg daily for 3 days For the first 2 days clotting times (Lee and White) further increased doses were given until the result was obtained (e g 0 2 sec at 135 volts, then 0 25 sec at 135 volts, then 0 25 sec at 140 volts and so on)

A sub-threshold shock raises the threshold to a subsequent one so that the true threshold, after a series of unsuccessful stimuli, is slightly lower than would seem likely from the effective setting After the first determination of threshold the patient becomes slightly more fit-resistant each day, as with Cardiazol, but, as the curves show, the rise is slight and is most definite during the first few days In several hundred other patients there was no continuous rise of threshold

In the curves of fig 1 the ordinate is the product of voltage and duration It has been found that on the whole, the cerebral-excitability curve for convulsions shows a constant quantity relation, if the duration is halved the current must be doubled to have the same effect, so that if in a series of test stimuli both time and strength are varied the product of the two can be regarded as a suitable quantity for plotting The electrical resistance of each patient varies little from day to day so that the current was roughly proportional to the voltage Moreover, resistance variations are mostly illusory, since the skin resistance, which provides nearly the whole of the measured resistance, disappears altogether with the strong current used to induce the convulsion Measurement of the brief stimulating current itself is unreliable, since the power factor is uncertain, measurements with cathode-ray indicators have shown that the actual current passing can be assessed accurately by assuming in any given patient a proportionality with voltage

The nature of the convulsion and of the recovery stages were noted on each occasion On the 16th, 17th and 18th days three capsules of epanutin were given by mouth As the curves show, the effect on the convulsion threshold was not visible for several days Possible reasons for this delayed action and its clinical significance will be discussed later The effect of the epanutin on the patients' mental state and on recovery from the convulsions cannot usefully be discussed until more observations have been made over a longer time The cases selected for these preliminary trials were not of a type to give a very clear account of their feelings This paper is concerned rather with the effect of the drug on the convulsive process and with the clinical inferences that can be drawn

After the few days' latency the threshold rose considerably in all patients In two of them the rise was so great that it became impossible to induce a convulsion at all This is striking objective evidence of the protective power of the drug A second series of doses was given on the 21st, 22nd and 23rd days This time six capsules were taken every day, and after a few days they caused a second hump in the curves, but the effect was little greater than after the smaller doses After this second peak the decline in threshold was very slow and irregular, some of the patients taking 14 days to return to the pre-dosage level During the height of the drug-action period it was noticed that the convulsions in all patients were more ragged and variable in duration than usual, the tonic stage was often particularly abbreviated Recovery was usually more rapid and mental confusion seemed less frequent Two patients seemed intoxicated by the drug and one of them babbled incoherently, but there were only mild physical signs of epanutin intoxication

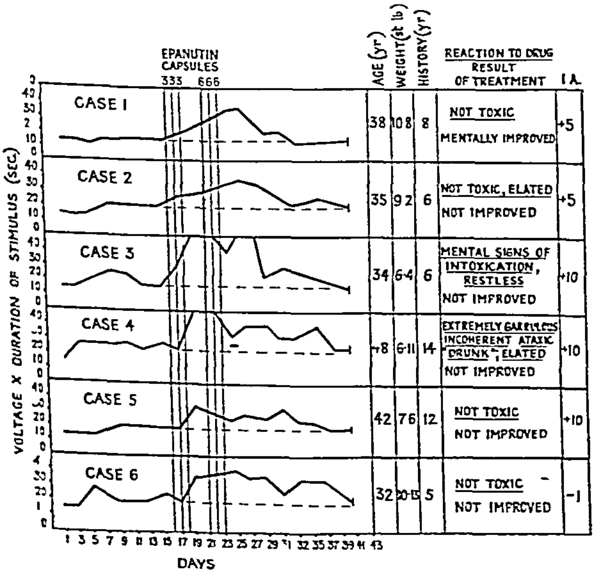

FIG 1—First trial showing variation in threshold produced by epanutin Voltage and duration of stimulus were varied to obtain a threshold. I.A., impedance angle

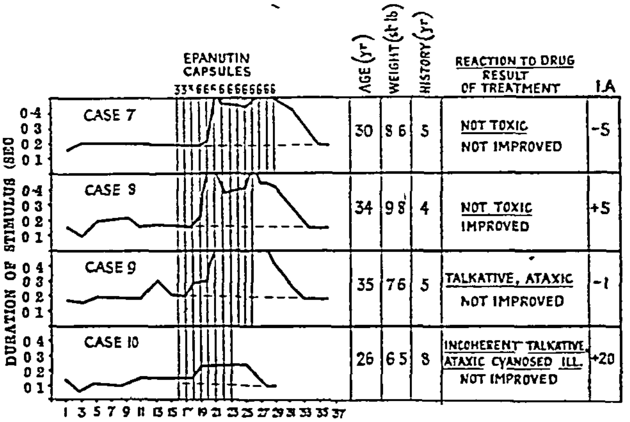

FIG 2—Second trial Voltage was kept constant except when threshold became extremely high

SECOND TRIAL

A second series of four patients also undergoing electric-convulsion therapy was then selected for a further trial They were of the same type as those in the previous group

In these cases the voltage was kept constant, only the duration was varied, except when the threshold became extremely high and the maximum dosage was administered to prove complete resistance to convulsions Fig 2 shows the duration threshold changes, together with the physical features and responses of the patients As in the previous series, there is a definite latency followed by a sharp and dramatic rise Administration of epanutin was begun on the 16th day with three capsules daily, and from this day convulsions were given daily in order to observe the detail of the threshold changes On the 19th day dosage was increased to six capsules daily and was continued for the varying periods shown on the curves Again two of the patients became completely resistant to fits, one showed a 100% rise in threshold and the one with the poorest physique only a 50% increase This patient also exhibited severe toxic symptoms—ataxia, increased cyanosis and confusion—and the drug was withheld on the 23rd day. In the other patients withdrawal was followed by a decline in threshold which reached the pre-dosage level in 4–7 days In the first series the fall was much slower and it is tempting to explain this difference as an effect of the more frequent convulsions In the second series the day-to-day fall in threshold after withdrawal was more rapid, but the decline after each convulsion was about the same as in the first series

DISCUSSION

As the curves clearly show, the convulsion threshold was significantly raised in all the patients In the smaller patients the rise was so great that no convulsion could be induced, nor in these cases was there any sign of cortical spread or persistence suggestive of an abortive epileptic process This confirms the claims of Putnam and Merritt regarding the dramatic effects of the drug on animals The other striking point is the delayed action of the drug There is a latent period of 4–6 days, after which the effect develops rapidly to its maximum On withdrawal there is an almost immediate but gradual decline, varying in rate apparently with the number of

The patient thus had a partial radial-nerve lesion affecting the forearm extensor muscles The forearm muscles of the flexor group were contracted and wasted but their nerve-supply was intact The radiogram (fig 2) shows that the muscle bellies of the flexor and extensor aspects of the forearm are infiltrated by calcium deposits which give an approximate rendering of the size and shape of the extensor indicis proprius, extensor pollicis longus and brevis, while other deposits are to be seen in the flexor digitorum profundus, flexor pollicis longus and in the radial extensors of the wrist These deposits are apparently extra-periosteal Radiograms of the upper arm and hand showed a united fracture of the humerus and disuse atrophy of the bones of the hand

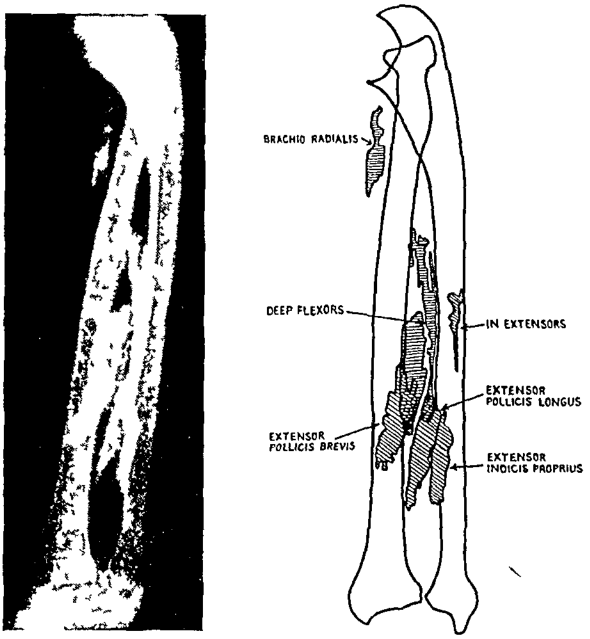

FIG 2—Anteroposterior radiogram of forearm, with key

DISCUSSION

The most arresting feature of this case is the widespread deposition of calcium in the forearm muscles The conformation of the deposits in the thumb extensors shows that the muscle-fibres have been largely replaced by calcium, and by analogy it is probable that the more irregular deposits have also originated in muscle The paralysis of the dorsal interosseous nerve may represent a partial nerve lesion occurring at the level of the wound, or more probably an unusual sequel of an ischæmic paralysis of the Volkmann type That such an ischæmia occurred is probable from the history and present condition of the limb, and it was doubtless due to some injury of the brachial artery The distribution of the calcium deposits indicates that both flexor and extensor groups were affected by the ischæmia Calcification of muscle after pure nerve injuries sustained in the last war was described by French writers and more recently by Voss,[1] but a radial-nerve lesion alone cannot be held responsible for the widespread deposits in this case This ischæmic involvement of the extensor group differs from the usual account of Volkmann's contracture in which there is described a contracture of the flexors only The extended posture of the metacarpo-phalangeal joints indicates that the extensors were affected by the ischæmia

This case is an example of dystrophic calcification such as is found in old tuberculous glands, scars and other unabsorbed devitalised tissue, the muscle devitalised by ischæmia would also seem to be a likely site for the laying down of calcium

We wish to thank Dr Herbert Lightstone, director general of medical services, Ministry of Pensions, for permission to record this case

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[1] Voss, H *Fortsch Röntgenstr* 1937, 55, 423

EPANUTIN AND ELECTRIC CONVULSION THERAPY

BY

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THE anti-convulsant properties of disodium diphenyl hydantoinate (Epanutin) were discovered experimentally by Putnam and Merritt (1938), who found that it remarkably raised the threshold for electrically induced fits in animals The rise was often of the order of 100% or more while the effect of Luminal and bromide was much less striking

Encouraged by these discoveries Merritt and Putnam (1939) tested the drug on epileptic patients and found a very satisfactory reduction both of major and of minor attacks even in patients who had been unresponsive to luminal At the same time there was little or no hypnotic or depressant action, though in certain cases there were troublesome side-effects The drug is now accepted as a valuable addition to our armoury against epilepsy The pharmacology of the compound is still incomplete and the nature of its anticonvulsant action is quite obscure Although resembling the barbiturates slightly in composition its action seems very different since it is not a cerebral sedative, and, from electroencephalographic studies, it seems to affect the local epileptic abnormality rather than the tendency of the disturbance to spread over the cortex which appears to be the basis of action of luminal

Acting on the suggestion of Dr F L Golla that epanutin might act through improvement of the cerebral circulation, it was decided to try the effect of administering the drug to a series of patients suffering from a variety of mental disorders There seemed a possibility that normal cortical function might be encouraged even in patients not liable to typical epileptic attacks The results were irregular but not altogether unpromising Pushing the dosage evoked side-effects, and the treatment was discontinued At the same time a number of similar patients were being treated with convulsions induced by brief electrical stimuli, for accounts of the technique see Cerletti and Bini 1935, Golla, Fleming and Walter 1939, 1940, Shepley and MacGregor 1939, 1940, Walter 1940, Fox 1940 There seemed a possibility that a combination of this treatment with small doses of epanutin might produce good results Moreover, although the results of the electrical treatment are excellent and accidents few, there are occasional mildly unpleasant transitory sequels, such as poorness of memory and orientation and sometimes considerable confusion Since epanutin often has an excellent effect upon similar complaints in epileptics, it was decided to try the effect of the drug on patients undergoing electric convulsion therapy It was known, of course, that the electric convulsion threshold was likely to be raised by this procedure, but the margin of safety in the electrical treatment is so great that dangerous consequences were not anticipated, even if twice the usual dose of current had to be given As it turned out, this confidence was justified

FIRST TRIAL

A group of six patients was selected for the first trial They were all chronic schizophrenics with some degree of dementia and of fair physical condition None presented any distinctive clinical features Their respective ages, weights and lengths of history are given in fig 1, which also shows the variation of threshold during and after the period of epanutin dosage It will be seen that treatment was given three times a week

In this series both voltage and duration of stimulus were varied to obtain a threshold The voltage was set to an average value, usually 130 volts The time switch was then adjusted to a fairly short duration, usually 0 2 sec If a convulsion resulted immediately without latency the dosage was reduced slightly on the next occasion—for example, duration dropped to 0 15 sec If there was a definite latency of more than 3 sec the dose was taken as threshold and the same was given next time If there was no convulsion

35%, appendicitis for 2·3% and cholecystitis for 0·8%. The last two figures agree closely with those of the Mayo Clinic. According to C. E. Newman, 92% of Army dyspeptics had symptoms before joining, and a more recent examination of recruits by Colonel J. Gibson Graham indicated that 94% of patients with peptic ulcer previously had symptoms of an average duration of seven years; in the more shadowy group of gastritis 80% had a previous history averaging nine years. Little attention has been paid to the large increase in dyspepsia in the civilian population during the last twenty years. Army rations are undoubtedly heavier than those to which most recruits have been accustomed as civilians, but considering the small amount of organic disease that begins in the Army and the remarkable health of the men in the training centres, it can be said that the Army diet is entirely satisfactory for healthy men who have not previously suffered from dyspepsia. The cooking, though it left much to be desired in earlier days, has improved out of all knowledge. These men would have relapsed just as certainly, though possibly a little later, on the best diet and cooking. Army routine is not compatible with the maintenance of health in chronic dyspeptics. A busman can take many light meals throughout the day—practically a Sippy diet. But in the Army, even in peace-time, a man with a peptic ulcer cannot live the routine life, and a regulation has for many years been in force that men with organic lesions or peptic ulcers shall be invalided. Those who have recently advocated the invaliding of all peptic ulcer cases have forgotten that this is the ordinary practice.

Many men who report sick with dyspeptic symptoms are classed as psychoneurotic and sent to psychiatrists and psychiatric wards. These have not been included in the medical returns as dyspeptic. If psychological factors are not often found in the medical ward, the exclusion of these cases is the reason. Newman, and also Graham, concluded that there is very little psychological disturbance in peptic ulcer and similar conditions. Peptic ulcer cases in hospital lose their symptoms purely on rest and dietetic treatment; psychological disturbances—unless they were gross—do not delay recovery.

The findings in gastritis cases are negative on admission. They correspond largely to the cases seen in outpatient departments who are investigated fully without any cause being found and are then sent back to their doctor. In the Army such patients have to go into hospital. The gastroscope might advance knowledge of them, but the Army does not provide gastroscopes. These cases cannot be dealt with by short courses of treatment. They are far more resistant than peptic ulcer cases and have far more of a "psychological aura." They should be sent back to their units. In the earlier months it was the practice to mark them down to lower categories, but that course completely failed; they relapsed and their symptoms continued just as definitely. They are capable of carrying on in spite of their discomforts and of making useful and efficient soldiers. It is the duty of medical officers to keep them in their units as long as possible; but when they have been twice in hospital it is useless to start them on a shuttle-service, and they should be boarded out.

Transient dyspepsia is nearly always discussed in terms of cases in hospital. The cases which never get there are far more numerous. A healthy man may report sick with dyspepsia during the second fortnight in his training centre, and a wise medical officer will reassure him and give him a bottle of medicine to avert the stigma of malingering. The man may report sick twice more in the next fortnight, perhaps once in the next, and then he becomes acclimatised. A weak medical officer would send such a patient to see a physician in hospital or a medical specialist. A good specialist would send him back with a strong hint not to refer such cases; but if he has had too much experience of consulting practice he will admit the man to hospital, where he will be fully examined with negative results, rapidly lose his symptoms and be discharged "cured." If a man comes into hospital twice for the same complaint he is unlikely to develop into a useful soldier; he has been converted into a case of incurable gastritis. Special hospitals, though they may offer the advantage of research, are not to be recommended for gastric cases; the work in the smaller hospitals has reached a very high standard.

Dr C. E. NEWMAN described the investigation he undertook with Mr R. T. Payne early in the war. The Army then consisted largely of old reservists and was faced with the dietetic problems of an expeditionary force. Later investigations, however, showed that organic lesions bulked large. Another group consisted of men with "gastric stomach"—one which always went back on them in times of stress. A good many of these men owed their symptoms to psychological trouble; on investigation they turned out to be cases of gastritis of the real Alexis St. Martin type. In the radiogram they showed nothing but sometimes a layer of residual secretion lying above the contrast meal; the test-meal showed an excess of hydrochloric acid, a high rising acid curve and an associated excess of mucus. Dr Newman wondered whether the clinical picture of a year ago was not utterly different from that seen now. A good deal depends on the diagnosis between duodenal ulcer and duodenitis. The physician should assess the clinical evidence before he considers the radiogram, and should make the diagnosis as a clinician and not as a machine. The majority of cases diagnosed as duodenitis would, if clinical factors were taken into consideration, be called an ulcer. He found no evidence that neurotic factors played an important part in the genesis and maintenance of the ulcers he saw a year ago. Psychological factors are admittedly important in the causation of gastric disorder, but hardly any such factors were operating last winter, and the patients were damaged by their Army diet long before psychological factors could come into play. The distinction between organic and neurotic dyspepsia cannot always be made; many organic cases are neurotic and the ordinary gastric-ulcer case shows a certain mental abnormality. If both factors are present, both should be treated. A certain number of gastric cases in the Army ought to be fully investigated. It is unwise to let difficult cases go in and out of hospital; they are only spreading gastric notions and being useless soldiers. Without proper investigation there is a risk that medical officers are not behaving as physicians at all. There is a tendency to treat a soldier as a peculiar sort of animal. Unless some mechanism for examination exists the gastric case will not always get a fair deal.

Major J. G. SCADDING communicated a paper which was read by Dr J. L. LIVINGSTONE, the hon. secretary. Major Scadding had investigated cases of digestive disorders referred as outpatients by unit medical officers in the autumn of 1940. They contained a preponderance of recent recruits, and in the majority the symptoms had started in civil life. Of a large group with gastro-duodenal symptoms who were examined radiologically, nearly half proved to have peptic ulcers. Some of the patients with proved ulcers had been very young at the first onset of symptoms—the average age was 26. In general the clinical picture of the proved ulcer group corresponded to that usually attributed to peptic ulcer, but some of the histories were far from conforming to the accepted picture. The real difficulty arose in cases where the radiological evidence was equivocal. Temporary dyspepsia might account for a number of the cases not considered clinically to be organic. Many who showed a smooth gastric outline with a normal duodenal cap gave histories highly suggestive of peptic ulcer. The discrepancy between radiological data and conclusions on clinical grounds is one of the most difficult problems of the specialist. The diagnosis of gastritis can perhaps only be established by gastroscopy; the diagnosis of duodenitis seems even less capable of actual proof. The only justifiable diagnosis in these cases is the non-committal one of dyspepsia. Vomiting seems to bear little if any relation to the gastric condition and does not mark any special type of Army dyspepsia. In very few cases in this series were psychological factors regarded as the principal cause of the symptoms. The atmosphere of uncertainty which surrounds dyspeptic cases without radiological examination has a very unfavourable effect. A special unit should be established to deal with doubtful cases.

Sir ARTHUR HURST remarked that in civil outpatients gastric outnumber duodenal ulcers by four to one; in the Army the proportion is reversed, though he could not say why. More than half the gastric cases admitted to the Radcliffe Infirmary during the past year were referred convulsions With these data alone no satisfactory explanation of the time relation of action can be given There is unfortunately not yet any satisfactory test for epanutin in the blood or other body fluids, so that it is impossible to decide whether the shape of the time curve is due to delayed absorption, accumulation or to some slow cellular change Evidently the dosage is even more critical than experience with epileptics would suggest, since the smaller patients show the greater effects, both protective and toxic The dose of three capsules a day seemed to be about optimal, since doubling this dose did not double the effect but did aggravate the toxic signs *The one patient who showed a threshold rise of only* 50% with several toxic signs (case 10) was very emaciated Her impedance angle (Brazier 1933, 1934, Brazier and Grant 1934) was plus 20, well outside the normal range, and suggestive of some degree of hyperthyroidism * It is conceivable that the raised metabolism associated with this condition might have something to do with the patient's apparent idiosyncrasy In using epanutin for the treatment of epilepsy it seems likely that patient trial of small doses is necessary to obtain good fit-control without delayed toxic actions In nearly all the patients discussed here the ataxia and other signs appeared well after the threshold had reached its height

No drug can be properly used until it is fully understood The action of epanutin is by no means clear and its application is therefore largely a matter of trial and error In its effect on electrically induced fits we can see a suggestion of the manner in which it surpasses a sedative such as luminal. Electro-encephalography of essential epileptics shows that, whereas luminal limits to some extent the spread of an abnormal electrical process over the cortex, epanutin actually reduces the size and intensity of the focal trigger mechanism Now in the induction of convulsions by electricity the stimulus consists of a pulse or burst of alternating current Variation of the duration of stimulus actually varies the number of waves or number of stimuli which the brain receives Variation of voltage varies the area of cortex subjected to an effective stimulus When a very low-voltage (say 60 volts) stimulus is used, lasting about 0 5 sec, the type of fit is not as stereotyped in character nor as constant in duration as when a larger briefer stimulus is given Both stimuli may be above threshold, in that a convulsion follows, but the convulsive process is not identical in the two cases When a weak, long stimulus is used the convulsion is often delayed in onset, focal in extent and may last much longer or shorter than the average This is presumably because only a small area of cortex is stimulated effectively, so that the epileptic process does not develop simultaneously in all places, as it does when a strong stimulus is applied and the whole frontal cortex is thrown into synchronous maximal activity The effect of epanutin in doses insufficient to prevent fits altogether is very similar to that of reduction of voltage—the convulsion is more ragged and localised and its length is more variable As a working assumption epanutin may be considered as raising the electrical threshold of the cortical cells so that a stimulus of fixed strength will affect fewer cells But that is not all, the duration of the stimulus must also be increased to compensate for the effect of the drug, which must therefore have some action on the cells which affects their tendency to repetitive discharge In electro-physiological terms this may be attributed to a decrease in the time constant of accommodation of the excitable structure, and it is probably this action which is the more important in fit-control, rather than the simpler threshold raising effect If this is so, it helps to account for the absence of a sedative or hypnotic action, since a moderate increase in accommodation would not necessarily impair the normal functioning of the excitable tissues, although it would decrease their liability to repetitive activity This may be compared with the reverse effect of excitatory drugs, such as tetra-ethyl ammonium iodide (Cowan and Walter 1937) If epanutin increases the accommodation rate in normal brains there is no reason why it should not also have this effect in epileptic brains, and it may well be that the specific anticonvulsant action of the drug is due to this property This theory is speculative, but it accounts for the facts discovered so far, it is hoped to *test the hypothesis by prediction of results in a further* series of observations

SUMMARY

Epanutin in various doses has been administered to ten mental patients undergoing electrical convulsion therapy

In all patients the electrical convulsion threshold was significantly raised In the smaller patients the rise was so great that it became impossible to induce a convulsion at all

The margin between maximum therapeutic and minimum toxic dose is small Six capsules a day had little more effect on the convulsion threshold than three a day, but toxic signs were more prominent

The full effect of the drug may not appear for up to 6 days after the first dose After withdrawal the effect may persist for up to 14 days depending on the frequency of induced convulsions

Even when the convulsions were not entirely inhibited by the drug they were made more variable and ragged, less typically epileptic Partial seizures of the Jacksonian type were more common

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Medical Societies

ROYAL SOCIETY OF MEDICINE

AT a meeting of the Section of Medicine on March 25, with SIR MAURICE CASSIDY, the president, in the chair, a discussion on

Dyspepsia in the Forces

was opened by Colonel H LETHEBY TIDY From the time of the first arrival of the British Expeditionary Force in France, he said, attention was focused on the amount of dyspepsia in the Army Of all cases diagnosed on the nominal roll, 50% were said to have some type of dyspepsia He expected to find in his investigations some form of neurosis, or a conventional diagnosis used for convenience in invaliding, but he was surprised to find that almost all the cases had peptic ulcers This great prevalence of dyspepsia and peptic ulcer continued in the military hospitals Nevertheless, gastric disease is not the largest cause of invalidism or of invaliding in the Army The chief causes of dyspepsia are peptic ulcer, including duodenitis and duodenal spasm, a group generally called gastritis but also *known as functional dyspepsia*, and an important group of transient dyspepsias Patients in the last group are not often seen in hospital, but it outnumbers by several times the other two groups together The remaining cases are divided among reflex disorders, malingering (this is extremely rare), and patients who are primarily psychoneurotic During last August the proportion of gastric cases in all military hospitals was 17 3% In recent months the proportion has become lower, and it does not seem to be increasing now that older men are coming into the service Of the organic cases, peptic ulcer accounts for 51 9%, gastritis for

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* The "impedance angle" is an electrical measurement It might be called an electro histological test of thyroid activity Introduced by Brazier in 1933 it has been adopted by centres in many countries as a substitute for or supplement to measurements of basal metabolic rate The whole body of the patient is made an arm in a modified Wheatstone bridge and measurements are made with a very small alternating current at about 10,000 cycles per sec At this frequency the body behaves not merely as a simple resistance but also as an electrical condenser The impedance angle is a gauge of the magnitude of this condenser attribute It is not a "skin effect" but is a characteristic of the body cells as a whole It is not affected by exercise or drugs, except thyroid extract or thyroxin It has been found a very trustworthy test of thyroid activity, being probably a measure of the average electrical thickness of the cell membranes Brazier devised an arbitrary scale, corresponding with the clinical B M R scale A reading of plus 20 is therefore above the normal range for women

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for hæmorrhage, but Colonel Tidy said that this and perforation were extremely rare in the Army The radiologists may be misleading the profession to some extent, and the clinician believes too much in radiological reports Many soldiers may be diagnosed on radiological grounds as duodenal ulcer because of a healed crater He supposed that if a gastric patient is doing important work and the Army wishes to keep him, it will be considered worth while to give him strict treatment and to return him to duty subject to definite instructions for aftercare He wished some arrangement could be made between Army and civilian hospitals for the continuation of treatment All the men invalided for gastric trouble should return as soon as possible to civil employment, he hoped they were receiving strict treatment during the weeks before they were boarded

Lieut -Colonel S J **Hartfall** said he was distressed to hear that the Army did not propose to provide specialists with gastroscopes Gastritis can be diagnosed gastroscopically, and the instrument also enables a large proportion of definitely negative reports to be given He could not understand how Newman and Payne found so few neurotics, the incidence of a neurotic basis among his dyspeptics was about 60%—patients who were entirely negative to gastroscopic examination and could be handed over to the psychiatrist Some 20% had a superficial patchy gastritis which he treated by keeping them in bed for ten days to a fortnight and washing out the stomach every morning with hydrogen peroxide a drachm to a pint, followed by 2 drachms of one of the aluminium hydroxide preparations, and a teaspoonful of the same drug every four hours between meals, which should be light Unsuspected chronic gastritis is not likely to be the explanation of many cases of dyspepsia which give negative findings on examination

Mr **Reginald Payne** admitted that the picture of the dyspepsia which he and Newman saw was largely different from the present one He found considerable dislike of gastro-duodenal patients and a tendency to regard them too easily as malingerers He thought that this discussion had demonstrated the need for an absolutely accurate diagnosis whenever possible An adequate history cannot be stated in two or three lines It is important that one person should summarise all the evidence and that the diagnosis should not be left to the radiologist or to anyone who has not all the evidence before him Very few of the cases he investigated with Newman should have been accepted for the Army

Colonel E B **Marsh** said he was that rare person, a regular Army physician who had been practising medicine in the Army all over the world since the beginning of the last war Only one question has to be answered in dealing with a dyspeptic soldier is he fit to be a soldier, and if so, in what category ? To lose sight of this aspect is to waste much time The incidence of ulcer is greatest between 19 and 22 in the Army instead of between 30 and 35 in civil life, because cases are reported earlier He and his regular colleagues do not use the term gastritis except as a precise description He has been accustomed to divide these patients into bun-eaters and beer drinkers He does not recognise the term " soldier's stomach " The gastroscope cannot be obtained anywhere, and to try to produce it specially seems unnecessary Clinical evidence should be sufficient to decide whether or not a man is fit for duty

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Reviews of Books

The Art of Surgery

A Textbook for Students and Practitioners (4th ed) By H S **Souttar**, D M , M Ch Oxfd, F R C S London William Heinemann Pp 779 2 vols 25*s*

Mr Souttar explains that his object in changing the format of his textbook has been to encourage its use as a companion for the student, rather than as an unwieldy book of reference This change is welcome, for the popularity of the work with students is due in the first place to the fresh and interesting way in which the various subjects are presented, carrying the attention on from paragraph to paragraph The thumb-nail illustrations have increased in number since the last edition, and are an excellent method of focusing attention The author has had in the forefront of his mind the importance of developing in students a sense of proportion, he avoids dwelling on the details of surgical operations and allows himself to linger longer where he is dealing with fundamental principles ' The section on fractures is the weakest, containing passages that will confuse, and may even mislead, the student brought up in the modern regime of exact and prolonged control of fractures by splinting—for example, the recommendation that in treating fractures of the arm or below the knee the splints used should be in almost all cases removable, so that the limb can be daily exposed for inspection and massage However, Mr Souttar quotes the Winnett Orr method of closed plaster treatment of compound fractures, where the splint is certainly not removed daily Fracture of the neck of the femur, on the other hand, is described without reference to any method by which union can be obtained—he mentions neither the Smith-Petersen pin nor the Whitman plaster Other omissions are probably more deliberate, serving an educational purpose such as the lack of any reference to the delayed treatment of acute appendicitis The clinical descriptions are a pleasure to read, and the classification and arrangement clear and explanatory

Experimental Physiology

(2nd ed) By **George** H **Bell**, M B Glasg Glasgow John Smith and Son Pp 192 6*s*

This book has been enlarged and the arrangement altered to a systematic one in place of the programme based on the Glasgow courses of experiments It is still scarcely comprehensive enough to constitute a standard practical textbook, and is likely to be more use to Glasgow students than to others, but the experiments have been carefully selected so as to be representative and most of them are clearly explained The book is certainly good value for the money

Weight Reduction Diet and Dishes

With tables and recipes suitable for diabetics (2nd ed) By E E **Claxton**, M B Lond London William Heinemann Pp 201 8*s* 6*d*

War conditions have altered our outlook on weight reduction—it may even be, as it was in the last war, that we shall undergo compulsory slimming, though we hope not There certainly has been and will be a qualitative change in the nature of the foods we can obtain This book will be of use to those who want a brief dogmatic statement of how to obtain the vitamins which changes in the foods available may remove from our diet though the Ministry of Food has already knocked one of the recommendations on the head It is that one pint of milk, a liberal helping of green vegetables and an orange should be used to satisfy the daily requirements of vitamins and inorganic elements Today watercress, mustard and cress, radishes, and raw cabbage or turnip salad must take the place of the orange It is a pity that Miss Lucy Burdekin in her interesting recipes has included none for raw, vitamin-C-containing vegetable salads

This book will find a new and useful place in supplying the ordinary housewife with recipes for dishes made with little fat and no sugar She is naturally chary of replacing sugar with saccharin for she does not know the proportions Here she will find recipes for such things as sugarless marmalade and sugarless jams, and throughout the recipes the quantities of saccharin and a butter substitute (Lister's Golden Spread) are given Moreover there are recipes for pickles, chutneys and sauces with little or no calorie value which would be useful in " getting down " the diets to which we may have to accustom ourselves This edition has not lost any of its original value to doctor and patient by becoming more useful to the ordinary housewife Dr Claxton is firm on the point that any weight reduction by whatever means should be done under the guidance of a doctor, and he does not advise people to think of reduction unless they are 15–20% above the average weight Slimming for slimming's sake is a mistake, but if anyone for his health's sake has to slim this is the book to tell him how to do it

THE LANCET

LONDON SATURDAY APRIL 5, 1941

GETTING A MOVE ON

It was one of the lessons of the last war, confirmed in this, that the life of a seriously wounded man often depends on how soon he reaches the hands of the surgeon Delay may mean that sepsis and more particularly gas gangrene gain a footing from which no subsequent treatment can dislodge them In the case of air raid casualties time may be lost at the incident, during the journey to hospital, and at the hospital itself, and the likelihood of delay is not reduced by the division of authority which still exists The teams which gather the wounded from the street, care for them throughout their treatment and return them to their homes should be made up of colleagues owning but one master Moreover, it was not at first realised that the successful treatment of casualties is the business of the whole of the A R P services, and not least of the fire brigades, police and wardens Nor was it appreciated that though an admirable system of central and sub-control posts and report centres had been designed and brought into being success would often be thwarted by failure of coordination at the site of a major incident For reasons of finance some of the services were established without non commissioned or commissioned officers, and without these, even after long and rigorous acquisition of discipline, troops may fail in a crisis The "incident officer," when he exists and when he is of the right stuff, is invaluable he quickly brings order from disorder, he directs priority of services, he parks his vehicles so that none embarrasses the action of another, he keeps his area free for manœuvre, he acts upon and implements the advice of his specialist officers—police, fire, engineer and medical The "incident doctor," now recognised as an indispensable entity, can inspire the activities of his first aid parties and ambulances, and of those members of rescue and other services who find themselves actually tending the wounded, but "command" must leave him an unimpeded field for his own work His presence gives confidence, his experience is a stand-by, most appreciated by the most competent of his party leaders, his syringe is at hand where needed, he is there for appeal when the difficult case leaves first aid men in doubt He knows when a single case demands the immediate dispatch of an ambulance, he knows when a casualty can safely wait for the full complement of stretcher-cases to fill the vehicle

With the incident officer and the incident doctor functioning as they should, it is certain that a wounded man will start his journey to hospital at the earliest moment feasible It will not be at the site of bombing that time will be lost, and the time saved must not be wasted in hospital There is nothing to be gained by rushing at the operative task None but minor injuries are ready for immediate operation, and even the more lightly wounded are often so begrimed that, apart from the need for warmth and rest, time must elapse before they are ready for the theatre But delay at this stage should be intentional—when the patient is ready for the theatre the theatre should be ready for him This means that no hospital should be sent, or should accept if sent, more patients than it can cope with efficiently within a given number of hours Some 10–12 cases for each operating-theatre seems to be the limit A sure means must be found for intimating to those who direct the ambulances that a given hospital has taken in as many casualties as it can deal with As a peripatetic correspondent urges, hospitals must not let pride in their competence and willingness for a long spell of work affect their estimate of what each link in the chain of their organisation can stand When the breaking point looks like being reached it should be the routine to notify the central control of A R P services, so that other casualties are diverted to other and less busy hospitals, and there should be no false shame in calling for the help of visiting teams in good time so that when they come exhaustion will not cloud their welcome

EPIDEMIOLOGY OF YELLOW FEVER

For three centuries at least yellow fever has periodically ravaged the larger seaboard towns and cities of West Africa and tropical and subtropical America Whether the disease was originally one of West Africa, and was conveyed thence by ships to the West Indies and to South America, or whether it has flourished in South America from remote times, is doubtful From the African and American endemic areas it is known to have been transferred to Mexico, the United States, the Canary Islands, Spain and Portugal, Italy, and the small islands of Ascension and St Helena in the South Atlantic In 1865 an outbreak even occurred in Swansea, but the disease, so far as is known, has never invaded Asia or Australasia, although it was feared that the opening of the Panama Canal might facilitate the invasion, and more recently the development of rapid air transport has occasioned alarm as a potential method of spread

An American commission in Cuba at the beginning of the present century established that a mosquito, *Aedes ægypti* (*Stegomyia fasciata*), served as an intermediate host for yellow fever, and that this mosquito, feeding on a patient during the first three days of his illness, could, after a lapse of about twelve days, transfer the infection by its bite to non-immune people *Aedes ægypti* is essentially a domestic, or house-haunting, species of mosquito and is of world-wide distribution The commission demonstrated that mosquito transfer was the normal method by which the disease spread from one individual to another and showed that contact infection did not occur in nature They therefore postulated that the disease could be effectually controlled by measures directed towards the destruction of mosquitoes and the protection of the sick against the bites of these insects Two theories—that yellow fever was primarily a disease of the large maritime towns, and that it was in nature conveyed from man to man solely by *Aedes ægypti*—determined the policy of the Rockefeller Foundation in combating the disease in South America A vast amount of labour and large sums of money were expended on destroying what were believed to be the "seed-beds of infection," in the belief that these seed-beds were few in number and that their sterilisation would result in the disappearance of the disease not from them alone but also from the tributary areas periodically reinfected from them The improved sanitation of Panama and Havana

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extending from the West coast to the Anglo-Egyptian Sudan, Uganda and Abyssinia in the east, and from the Sahara in the north to Angola and the Belgian Congo in the south -Over large tracts of country in which positive mouse-protection tests were obtained no clinically recognised yellow fever had ever been recorded Silent endemic areas were demonstrated in Africa just as in South America The extension of the test to domestic animals (cattle, sheep, camels, horses and monkeys) has revealed that certain individuals possess immunity to the virus, though it is known that the African monkeys in the endemic areas do not show any clinical manifestations when artificially infected with it A disturbing feature has been the rapid rise in the number of immune persons in certain districts In a district of the southern Sudan the proportion of natives whose blood gave positive protection tests rose from 0 to 18% within four years, without any clinically recognised yellow fever In this district *Aedes ægypti* is almost non-existent It has not yet been established that jungle yellow fever exists in Africa, but these facts suggest that it does The potential danger of the situation is obvious, and is illustrated by a serious epidemic in the Nuba Mountain district of Kordofan Province of the Anglo-Egyptian Sudan This epidemic, the greatest so far recorded in any part of Africa, occurred in a district where up to October, 1940, no case of the disease had ever been recognised clinically, although a mouse-protection-test survey conducted there some years before had shown the presence of the infection The outbreak involved an area of 6000 square miles, there were 1600 deaths among the 15,000 recognised cases, and it lasted a couple of months before being brought under control In so far as risk to an immigrant European population is concerned, the solution is easy The artificial production of immunity with attenuated strains of virus is both effective and simple , and the protection afforded is of considerable duration To deal with the indigenous population is a very different matter, as it is obviously impracticable to immunise them all The most that can be done is to deal with outbreaks as they arise and above all to forestall the advent of the disease in the towns, particularly those on the East coast of Africa, by efficient sanitation and mosquito control This is already being seen to

MILITARY STOMACH TROUBLE

THE main facts about dyspepsia in the Army are becoming clearer as the number of published reports increases The problem presents itself very differently to the various types of medical officer in the Army, and each of these has his own difficulties The variety of clinical approach was illustrated in the discussion at the Royal Society of Medicine reported on another page The unselected cases come first to the regimental M O , he finds among the total sick a large number of dyspeptics, and he has to decide which cases to refer to the medical specialist, and which to treat himself in the unit We badly need reports from representative regimental M O s on the material which they see , no single report would be final, because the nature of the M O determines, to some extent, the number and nature of the patients he sees An over-strict M O will find that his patients tend to be few and seriously ill, a new M O will see a good many who are “ [illegible] ” a slack or over-conscientious one will find himself flooded with trivial complaints. But in order to get a notion of what dyspepsia in the Army means it is essential to find out how it presents itself in the first instance It would probably be difficult to compare these findings with what was ultimately discovered about the patients, unless the survey was completed by a medical specialist, who could complete the record with the subsequent hospital findings

The problem as it appears to a medical specialist is again not the same as it appears in hospital , the type of case found in the wards depends on what he selects for admission Moreover, he determines to some extent the nature of the material he sees If he admits too many trivial cases the regimental M O feels justified in sending more of the same sort, and if he is known to be interested in some specialty cases of this type will tend to predominate Most of the information available is derived, naturally, from hospital material because cases there are most completely investigated and seem to be most worth publishing There is an opportunity here for the medical specialist to arrange with regimental M O s to keep records and publish with him a combined survey giving a complete picture of the cases This would reduce to their true proportions estimates of the incidence of the different types of dyspepsia with which the Army is troubled

The doctor in charge of the patients in hospital is well advised to have his dyspeptic patients examined as thoroughly as possible , his difficulty is the balancing of all the information in the light of the case-history in order to arrive at a diagnosis Once the diagnosis is settled, treatment and disposal are not so difficult, although they present their own special problems The difficulty is to deal properly with an inadequately diagnosed case In weighing up the evidence it is important not to allow any one item more than its due importance , X rays present a special difficulty If an ulcer crater is visible is it an active ulcer or a scar ? And still more, is a duodenal distortion an active ulcer or a scar ? And if no crater is visible but all the other evidence points to the diagnosis of ulceration, how is the medical board to be convinced, tending as it so often does, to require ocular demonstration ? There are, and it is right that there should be, differences between different radiologists in their attitudes towards the interpretation of results , the only uniformity to be desired is uniform accuracy But a responsibility rests on the radiologist, because he, and he alone, has had the advantage of seeing the screening He is the first to gibe at the clinician who insists on interpreting the radiograms for himself The value of real cooperation between radiologists and clinicians is illustrated by SAFFLEY S [1] recent paper in which he compares the radiological with the clinical findings in over 300 dyspeptic soldiers Ulcers were demonstrated radiologically in about 40%, which corresponds with the general run of figures since the heavily ulcerated population of reservists investigated by PAYNE and NEWMAN was discharged from the Army Only 2 2% were diagnosed radiologically as ‘ duodenitis ” Half the patients examined showed no radiological abnormality, and although these include three ‘ normal ” gastro-enterostomies and a few other hardly normal appearances the figure suggests that many unnecessary cases were being admitted for investigation resulted in the disappearance of the disease from these two cities, and also from many other cities of the Gulf of Mexico and the Caribbean Sea, the clearing of Santos, Rio de Janeiro and Nichtheroy was followed by the apparent disappearance of yellow fever from the whole of South Brazil, while anti-mosquito campaigns in the principal ports of the Amazon Valley led to its elimination from this vast region After a campaign in Guayaquil, and another in Northern Peru in 1920, no further cases were recorded on the Pacific coast of South America Similar results were later obtained in Colombia, Mexico and Central America, and during 1925 only three cases were reported from all the Americas, the complete eradication of the disease from America appeared to be in sight In 1926, however, the movement of non-immune troops through north-east Brazil was attended by the temporary reappearance of the disease in several states In 1928, yellow fever again broke out in Pernambuco and Sergipe, and shortly afterwards it appeared, after a lapse of twenty years, in Rio de Janeiro The fact that Rio was about a thousand miles from the nearest point known to be infected during the preceding year did not escape notice, and the origin of the outbreak was not determined During the height of this latter outbreak cases were recognised, attributable to it, at various points over a 4000 mile stretch of coast, from Buenos Aires to Belém, at Para and up the Amazon river. The theory that the destruction of the large seed-beds of infection alone would suffice to eliminate the disease had, therefore, to be abandoned, and steps were taken to include smaller towns and rural villages in the campaign Thus "rural" yellow fever was recognised as a factor in epidemiology in addition to the "urban" type

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[1] Saffley, R. *Brit J Radiol* 1941, **14** 96

Within the next few years the introduction of two methods of diagnosis profoundly altered the previous conception of the epidemiology of yellow fever These were viscerotomy and the mouse-protection test The first depended on the fact that certain specific changes occur in the livers of people dying of yellow fever An instrument, the viscerotome, was devised to obtain samples of liver from cadavers without the necessity of performing an autopsy This instrument could be used by laymen, and its employment was insisted on in certain areas whenever a person died within 11 days of the onset of a febrile condition, whatever the clinical diagnosis The viscerotomy services examined specimens from many thousand bodies over considerable areas of South America, and demonstrated that many people were dying of yellow fever in the absence of "visible" outbreaks of the disease They also showed that the distribution of the disease in "silent" endemic areas was much more extensive than had been expected, and further that yellow fever caused a considerable mortality among children, thus dispelling the idea that the disease was a mild one when it attacked children in endemic areas The mouse-protection test, devised about the same time as viscerotomy, depends on the fact that the serum of people who have recovered from yellow fever contains specific immune bodies If such serum is injected into a mouse at or about the time that the mouse is infected intracerebrally with a neurotropic strain of yellow fever virus, normally lethal to it, the mouse is protected against the effects of the virus The test, therefore, shows if an individual has previously had yellow fever (or has been artificially immunised against it) The application of the test in South America again demonstrated that the disease was far more widespread than had been thought, and that it was occurring in areas where it had not previously been clinically recognised A further use of the mouse-protection test is in dating the time of the occurrence of the disease For example, if no children under six years give positive tests it can be assumed that the disease has not been present in that district for the last six years The test also established the fact that yellow fever was occurring in the complete absence of the accepted vector, *Aedes ægypti* The aedes-free endemic areas were chiefly jungle districts, and the disease was found among workers in the forests, this was an entirely unsuspected aspect in the epidemiology of yellow fever It has now been established that in South America today yellow fever is primarily a jungle infection which *Aedes ægypti* is not the vector, and that man not an important reservoir of the virus What tl most important reservoir is has not yet been finall established, but it has been observed that tl American howler and other monkeys die considerable numbers at times when human infectio are occurring in the forests Three species American jungle mosquitoes, naturally infected wi the virus, have been captured

The present position in South America is that the are three types of yellow fever—the *ægypti* tran mitted urban and rural types, and the non *ægypt* transmitted jungle type The first two are acqure indoors, are likely to involve non-immune people all ages in the vicinity, and tend to spread along th routes of human travel They are dependent fo their maintenance on the close association of man an *Aedes ægypti* The third, or jungle, type is onl acqured by forest workers, does not spread to othe members of the community in the absence of *Aede ægypti*, and spreads through jungle irrespective routes of human travel The first two are relativel readily controlled by anti-*ægypti* measures, but th last, which now dominates the epidemiological pictur in South America, can apparently only be brough under control by individual immunisation of th exposed members of the population In the laboratory the jungle virus is readily transmissible by *Aede ægypti*, and thus if this virus is introduced to a *ægypti* district it can give rise to the epidemic *ægypti* borne form of the disease, conversely, the *ægypti*-born virus can be conveyed by the appropriate forest mosquitoes Clinically, pathologically and immunologicall the various types of the disease are indistinguishable

In Africa the position much resembled that in Sout America Yellow fever ravaged the maritime citie of West Africa, and, in view of the American work attempts were made to clear up those foci of infectio where *Aedes ægypti* was present in large numbers Freetown, Lagos, Port Harcourt, Calabar and othe cities were efficiently sanitated, and the severe urba and rural epidemics of the disease were controlled but the sanitary work done in these cities did no prevent outbreaks in Mamfe, Kano and other remot places The mouse-protection test was employe extensively in Africa, with the result that immun people of all ages were found over a large area abstinence, is not high, Ryle, indeed, regards it as very low. Probably susceptibility to tobacco sufficient to produce dyspepsia in an otherwise normal stomach is exceptional, most people being immune, though tolerance may diminish with advancing years or after an illness. There is some reason to regard intolerance as limited to those with the ulcer diathesis but this is a complex subject, and in spite of the amount of work done on it would still repay investigation. We do not yet know, for instance, whether the gastric symptoms produced by tobacco, which may closely simulate peptic ulceration, are primarily due to pyloric spasm, as might be supposed from the vigorous peristalsis and diarrhœa sometimes seen in young smokers, or to hyperchlorhydria which excites pyloric spasm. Nicotine acts on the synapses of both the sympathetic and the parasympathetic systems first as an excitant and later as a depressant. The results of a dose will depend on the balance between sympathetic and parasympathetic effects. The parasympatheticotonic person, who normally has a free flow of gastric juice, an active gut and relaxed sphincters will presumably begin by showing an increase in these characteristics, followed by spasm of the sphincters and inhibition of bowel movements; the reverse picture will be seen in the sympatheticotonic person. Irregular action between the two systems, however, might presumably produce any combination of symptoms including the pyloric spasm, active gastric motility and hyperacidity of the dyspeptic. Various other poisonous constituents of tobacco have been blamed for its ill effects—carbon monoxide, pyridine, ammonia, collidine, pectin, and even prussic acid and arsenic—but it is hard to ignore an observation made some years ago by Henry Moll[10] of Leeds. He was giving gr 1/10–1/5 of nicotine thrice daily hypodermically to cases of post-encephalitic parkinsonism in an attempt to reduce spasticity, and in 6 cases fractional test-meals were done before and after a 2–3 weeks' course of this treatment. Of these, 1 showed no change in gastric acidity, but in the other 5 there was a definite rise; in 1 patient, indeed, whose acidity had been normal before treatment there was a gross hyperacidity after 10 days on nicotine gr 1/5 three times a day. This fits in with the clinical experience that there is a wide variation in the response of the individual stomach to smoking.

HOURS OF WORK IN GERMANY

WHEN the National Socialist government came into power normal working hours in Germany were fixed at 8 in the day and 48 in the week and could be altered only by agreement between the employers and workers' organisations. With the suppression of the latter the government became the sole authority, and, by means of the regulations it introduced, a 10 hour day gradually replaced the 8 hour. By 1936, according to Waelbroeck and Bessling,[11] the 10 hour day had become usual in the metal-working building and similar industries, and the practice extended in turn to most of the industries working for rearmament. Similarly, early in 1939 the length of the shift for miners was extended by 45 minutes to 8¾ hours. With the outbreak of war all restrictions on normal hours of work for adult men were abolished, as were the increased rates of pay for overtime and night work and for work on Sundays and holidays. Holidays, in fact, whether paid or not, were to be done away with. How far the authorities made use of their wide powers is not known but it is significant that less than 3 months after the outbreak of war it was found necessary to restore the regulations at least partially. "He who wishes to work for the reconstruction of the Reich," Marshal Goering had said in 1938, "must not only work 8 hours a day but must work as he has never done before." But the disadvantages of excessive hours of work were pointed out as early as the beginning of 1939 and by the end of that year the government restored a limit to the working of overtime in excess of the normal 8-hour day (10 hours being the general rule) and reintroduced annual holidays. The reason given for the reversal is that the care of the worker's health must be a fundamental object of labour protection even in war-time, and that the relaxation of regulations was justified only in an initial period. It seems likely, Waelbroeck and Bessling conclude, that the use made of the facilities for extending hours of work was excessive. Germany too has probably re-learnt the lessons of the last war only by practical experience.

INDUCTION OF LABOUR WITH UROSELECTAN B

WHEN amniography was first employed to obtain a radiogram of the placental situation in suspected cases of placenta prævia, various substances were used to render the amniotic fluid radiopaque. Among these was Uroselectan B and the operators who employed it were quick to notice that a high proportion of their cases went into labour soon after its intra-uterine injection. Playfair[1] has now used the drug as a deliberate method of inducing labour.

Uroselectan B is an iodine compound of complex nature combined with an organic base so that in theory the iodine is not free to exert toxic effects on the body tissues, and this contention appears to hold good so far as intra-uterine introduction is concerned since it has been used for many years in cases of suspected placenta prævia without any harm to the mothers having been reported. Serial radiograms of the uterus after the introduction of uroselectan demonstrate that its maximum concentration lasts about half an hour, and no shadow of the amniotic cavity is to be seen after thirty-six hours; Burke[2] has been able to show that half of the drug is recoverable from the maternal urine at the end of this time. The fœtus in many cases shows a well-defined shadow of the stomach and colon, proving that it drinks its own amniotic fluid in sufficient quantities to render its alimentary tract radiopaque. The exact method of action of uroselectan remains obscure; it is more likely to be a local than a general one, since labour has not been observed to be prematurely induced by this drug in cases in which it was used for intravenous pyelography. Another reason for supposing the action to be local is that hypertonic saline and hypertonic glucose solutions when injected into the amniotic cavity will induce labour with a fair degree of certainty, the solutions employed being 10 c cm of 30% saline or 50% glucose.

Playfair found the optimum dose of uroselectan to be 10 c cm (half the one recommended for amniography), though he originally employed double this dose. After emptying the bladder, if necessary by a catheter, a point is chosen midway between the symphysis and the umbilicus; this point must be carefully palpated to exclude the interposition of maternal gut between the abdominal parietes and the uterus, and the exact fœtal position should be defined. Any operation scar in this region is a contra-indication to the use of uroselectan, for it increases the likelihood of maternal gut having become adherent, and though the risk of puncturing the intestine is probably exaggerated it is not one to be needlessly invited. Local anæsthesia and a fine lumbar-puncture needle are used. No uroselectan must be injected unless liquor amnii dribbles readily from the needle after removal of the stilette. Before and immediately after the injection it is important to count the fœtal heart-rate. If the placenta is inadvertently encountered it has been found to be safe to traverse this with the needle. Playfair advises that the best and quickest results are to be expected if the patient is kept up and about

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[10] Moll H and Flint F R *Brit J Surg* 1928 16 283

[11] *Internat Lab Rev* February 1941 p 127

[1] Playfair P L *J Obstet Gynæc* February 1941, p 41

[2] Burke F J *Ibid* 1935 43, 1096

Annotations

LEUCOPENIA

LEUCOPENIA was always a useful diagnostic pointer, but recent advances in chemotherapy have brought it into prominence as an indication that the dose of a sulphonamide is approaching the limits of safety Lawrence[1] urges physicians to "put more thought to leucopenia" and points out five possible mechanisms for its production diminished manufacture of cells, increased elimination, increased destruction, redistribution in the vascular channels, and redistribution in the body as a whole When we speak of leucopenia we nearly always imply a lack of polymorphonuclear leucocytes (lymphopenia is only of importance in the control of radium treatment) and Lawrence deals mostly with granulopenia Diminished manufacture of granulocytes has received most attention since examples of it are now well known, it occurs as part of a general disturbance of blood forming tissue in classical aplastic anæmia and probably also in pernicious anæmia and splenic anæmia Acute agranulocytosis, which is apparently a primary disease of the granulocyte forming tissue, has been extensively studied and the disappearance of the granulocytes has been traced to failure of the myeloblasts (the stem cells) or the myelocytes (the intermediate stage) to mature into adult cells The actual marrow picture varies according to the stage of the disease but at times myeloblasts may be the only representatives of the granulocyte series The cause of this arrest of maturation is most often a drug to which the patient is unusually sensitive, amidopyrin and the sulphonamides being the chief offenders Plum[2] was actually able to demonstrate in a patient the disappearance of myelocytes from the bone marrow after a dose of amidopyrin But this is not the whole story, in some cases, after prolonged administration of a drug, especially one of the sulphonamides, agranulocytosis appears fairly quickly If myelocyte formation ceases development of agranulocytosis must, of course, be rapid, since the life of the polymorphonuclear leucocyte is only about 2–4 days, and R L Haden has estimated that some 5–10 billion new cells are required every day But Plum and others have shown that in some patients only a few minutes elapse between giving a small dose of amidopyrin and the disappearance of granulocytes from the blood, and Vejlens[3] found that certain hydrophile colloids like globulin, which produce a leucopenia when injected intravenously, do so by causing the white cells to take up a marginal position in the venules of internal organs such as the liver, spleen, and omentum, they cause a sort of "leucocytic shock," since such leucocytes are temporarily out of the circulation This seems a possible explanation of the sudden disappearance of circulating granulocytes in sensitive patients, and fits in with Israels and Wilkinson's[4] observations that after a single test-dose infection can call back some of the granulocytes into the blood and that the rate of recovery seems uninfluenced by pentnucleotide Lawrence and his co workers have found this mechanism at work in the omental vessels of cats which had been given the virus of an infectious agranulocytosis—a disease which also arrests maturation of the granulocytes in the bone marrow This combination closely resembles that found in human agranulocytosis, and the mechanisms may be the same There is no evidence, however, that virus infection is responsible for even those few cases of the human disease not traceable to drugs Another condition which probably falls in the "diminished manufacture" group is the chronic neutropenia of which Piney[5] has reminded us As originally described it presented a distinctive clinical syndrome of apparently causeless fatigue and lassitude, the only pathological finding was a granulopenia of less than 200 cells per c mm The disease is rare, but all who have reported cases agree on the usual failure of treatment, including pentnucleotide, to influence the leucopenia, Piney's case recovered after receiving Hepatex T, a fact for which he can offer no explanation When referring to redistribution of granulocytes in the body Lawrence has in mind the paradox seen best in some cases of acute leukæmia, when the tissues are packed with leucocytes but the blood contains fewer than normal Robertson and Yu[6] have suggested that redistribution in the internal organs is the cause of the leucopenia of typhoid fever, since they were able to produce this effect with toxic filtrates of *Bacterium typhosum*, the missing leucocytes were found in the vessels of the lungs, spleen, and other organs Convincing clinical examples of increased destruction or increased elimination of leucocytes have yet to be produced, such events are not easy to demonstrate The researches quoted warn us that toxic inhibition of leucocytes may be brought about in a variety of ways among which redistribution is important

SMOKER'S DYSPEPSIA

THERE are still differences of opinion about how far smoking interferes with gastric digestion, your moderate smoker will maintain that his cigarette after meals helps by putting him in the right frame of mind for efficient digestion, but at the other extreme there is a lot of evidence that smoking raises gastric acidity and so both increases the chances of duodenal ulceration and delays the healing of established ulcers[7] This is to some extent a war-time problem, for smoking becomes more popular under war conditions, especially among those who serve by standing and waiting, and Beattie[8] has lately gone so far as to suggest that the kind friend who sent a million cigarettes to the troops in France might have done their gastric mucosa more good by sending a million glucose sweets or malted milk tablets instead Ehrenfeld and Sturtevant[9] have reviewed current opinions and carried out test meals on 33 normal people and 23 patients with peptic ulceration, on the first day the subjects took their meals without smokes, and next day after two cigarettes We are not told whether they were smokers or not, neither are we given any particulars about the type of ulceration in the ulcer group, and th smoking was always done before the meal Moreover for some reason the picture was complicated by givin each subject 200 c cm of 7% alcohol (the equivalent of glass of old ale) as soon as the fasting juice had bee removed The results therefore compare the gastri acidity after an alcoholic drink with those after a alcoholic drink plus two cigarettes It was found tha in 25 of the 33 normal people (76%) and 20 of the 2 ulcer patients (87%) smoking raised the gastric acidity In 10 subjects (presumably ulcer patients) analyses wer done on three successive mornings—first without smoking next after smoking two ordinary cigarettes, and last afte smoking two partially denicotinised cigarettes In 9 o these 10 there was a definite rise in acid values afte ordinary cigarettes, whereas after the denicotinised one 5 showed *no change and* 5 only a slight increase i acidity This suggested, though by no means proved that it was the nicotine rather than other substances i the tobacco which was responsible

The incidence of dyspeptic symptoms directly due t smoking, as shown by their disappearance after complete

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[1] Lawrence, J S *J Amer med Ass* Feb 8, 1941, p 478

[2] Plum, P Clinical and experimental investigations in agranulocytosis, London, 1937

[3] Vejlens, G *Acta path microbiol scand* 1938, suppl 33 p 1

[4] Israels, M C G and Wilkinson J F *Quart J Med* 1937 6, 35

[5] Piney A *Lancet*, March 15 1941 p 348

[6] Robertson R C and Yu P H *Caduceus* 1940, 19, 73

[7] See Ryle J A Gastric Function in Health and Disease London, 1926 p 111 and Hurst, A F Medical Essays and Addresses, London 1924, pp 4 and 33

[8] Beattie, N *Brit med J* Feb 15, 1941, p 257

[9] Ehrenfeld I and Sturtevant, M *Amer J med Sci* January, 1941 p 81

Special Articles

U S A VERSUS A M A

THE great trial in which the American Medical Association has to defend its attitude towards certain methods of "group medical practice" is shown to be well under way by an instalment (just received) of the verbatim report which the association is publishing in its journal[1] Two counsel have made opening statements for the prosecution The first has explained how the Home Owners Loan Corporation initiated the project of Group Health Association Inc , because H O L C (if we may adopt the convenient use of initials so well developed in America) found that its borrowers needed so many loans to meet doctors' bills, and thought that an ampler and better medical service preventive as well as curative, could be furnished cooperatively through G H A The defendants include not only the A M A but also the Medical Society of the District of Columbia the Harris County Medical Society, the Washington Academy of Surgeons and 21 named individuals Counsel alleged a conspiracy to prevent the 800 or more doctors of the Medical Society of the District of Columbia from accepting employment with G H A , to obstruct G H A in its efforts to obtain doctors from practitioners who were not members of the society, to attack doctors who joined G H A and to persuade them to abandon the connexion under threat of professional discredit in their practices and in their hospital work, and lastly to induce all local private hospitals to join in the boycott of G H A by refusing to admit Group Health doctors to hospital privileges A subcommittee of the A M A , it was said had reported that G H A was unethical and that participation in it by any member of the District of Columbia Medical Society would make him liable to disciplinary action as well as deprive him of courtesy facilities at various hospitals which the A M A had coerced into the boycott

The additional opening statement by a second counsel for the prosecution was mainly concerned with what, without any intended disrespect, might be called blue-book material He outlined the general developments of preventive medicine, bacteriology radium, cardiography and X-ray examination and dealt with the report of the American expert Committee on the Cost of Medical Care His object was to show that families in the lower income-groups receive too little medical service and find the cost of illness disastrous This information was material to indicate that Group Health Association and similar organisations improved the distribution of medical care and spread the cost by a system of periodical payments The American College of Surgeons, said counsel, had recommended in 1934 the continuance of experiments with periodic prepayment plans because they gave hope of more adequate medical care for the low-income groups A week later the A M A had passed a resolution condemning the college for its recommendations The A M A insisted that any such plan should comply with its own general principles One of these was that the plan should embrace all the qualified physicians within the locality , another required the cost of medical service in any plan to be borne by the patient who could afford to pay at the time when it was rendered The A M A , alleged counsel was hostile to group practice on the prepayment basis and had gone beyond peaceful persuasion in its methods

It may be convenient at this point to note that these proceedings are criminal, not civil There is an indictment, running into 30 pages, alleging conspiracy and violation of the so-called Sherman Anti-Trust Law This statute, named after its sponsor John Sherman (the younger brother of the famous general of the Civil War), was passed in 1890 and has since been modified Not content to rely on the common-law doctrine which makes agreements ' in restraint of trade " unenforceable, it prohibits under heavy penalties any contract, combination or conspiracy which restrains trade or attempts to establish monopoly In England we should expect a case of this nature to be dealt with not by a criminal prosecution but by an application to a Chancery judge for an injunction and a declaration of the rights of the parties Our classic authorities on the law of restraint of trade are mostly decisions in civil proceedings—the Mogul Steamship case in 1892, the Maxim-Nordenfeldt case in 1893, and the pronouncement by Mr Justice Astbury in the Firemen's Union case in 1926 which exercised no small influence upon the general strike It is perhaps unnecessary to explain that the District of Columbia is (like Canberra in Australia) a federal area lying outside the jurisdiction of the separate states It was carved out of Maryland on the north and Virginia on the south and it accommodates the federal government of the whole country There are in America many towns called Washington , this one is distinguished as "Washington, D C"—Washington in the District of Columbia Its great and growing population is largely official The American law-courts are of two kinds—those belonging to the several states and those of the federal government In the latter class is the famous Supreme Court of the United States at Washington which says the last word upon all constitutional disputes and upon the validity of all legislation (whether state or federal) The trial of the A M A is proceeding at Washington in one of the district courts of the federal system American forensic procedure often strikes English observers as old-fashioned , but the deliberate efforts to secure a jury which will eschew all bias are doubtless necessary in this case where so many Washingtonians may be members of G H A or patients or friends of the defendant doctors The court has patiently examined all the prospective jurors to find out whether they are subject to any such influence and even whether they (or members of their families) are officials of the United States, the prosecutor Jurors have been asked by the court if they or any members of their families have ever been sued by a physician, or if they have ever "had any occurrence which has aroused any antagonistic feelings towards a doctor, a physician, or any group of doctors or physicians" , had they formed any opinion about the right of hospitals to select doctors for their staff, or about the right of doctors to organise themselves in associations with rules and regulations governing professional practice ? And so on

To return to the trial, the two opening addresses for the prosecution were followed by a spirited opening address by counsel for the defendants He explained the constitution and standards of the A M A , its formulated ethics were derived, he said, from an Englishman named Thomas Percival who in 1803 framed them for the College of Surgeons in the City of Manchester in England The code, based on the oath of Hippocrates, had been proved to be the only safe standard for distributing medical care to the public and the patient The great developments in medicine, outlined by the prosecution, had been due to the efforts of the A M A to prevent the destruction of progress by quacks and charlatans who advertised their wares in such language as the G H A was using—"You can't sell medical service as you sell baked beans"

PLAN TO CHECK RHEUMATISM

RHEUMATIC disease, though widespread, painful, disabling and responsible for great economic loss, has never roused public sympathy or conscience as keenly as tuberculosis, cancer or venereal disease For one thing it presents no clear-cut picture , how can it, when the word has been used to cover at least two, and probably more, distinct disease entities ? The acute and subacute rheumatism of childhood, manifesting itself as rheumatic fever, tonsillitis, chorea and growing pains and bringing in its train heart damage, invalidity and often death, has probably nothing in common with the disabling muscular rheumatism, fibrositis or osteo-arthritis of later life , and these again may prove to be distinct from rheumatoid arthritis, and even from each other To devise a plan which will ensure the diagnosis, treatment and aftercare of all these is not simple, but Lord Horder, in collaboration with the Empire Rheumatism Council, has some practical suggestions to make[1] Their plan was almost ready in 1939 but it seemed

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[1] J Amer med Ass 1941, 116, 601-630

[1] Rheumatism A Plan for National Action London H K Lewis 2s

Any method of inducing labour must be assessed by its comparative speed, certainty and morbidity-rate for both mother and child Out of his 115 cases, Playfair reports 4 failures, and the average time between injection and the onset of labour was roughly 29 hours—slightly longer than after artificial rupture of the membranes His corrected fœtal mortality for uroselectan induction was 3 6%, while a similar series of controls, in which artificial rupture of the membranes was performed, had a fœtal mortality of 4% His incidence of puerperal pyrexia was 5 out of 115—1 due to tonsillitis, 2 to urinary infection, 1 to red degeneration of a myoma and 1 to a local infection of an episiotomy When it is considered that none of these was a true case of uterine infection this method compares favourably with other surgical methods, where an average infection rate of 10–15% is to be expected One point strongly in favour of uroselectan is that it is no contra-indication to a subsequent cæsarean section, which was successfully performed in 2 of Playfair's cases, whereas it is a bold obstetrician who would consider section after surgical induction The length of the various stages of labour was not appreciably different when uroselectan was compared with the other methods of induction

THE BRAIN-STEM IN CONCUSSION

Denny Brown[1] lately called attention to the cases of head injury which, after a latent period, develop collapse associated with bradycardia, headache and a variable degree of neck rigidity The blood-pressure remains normal and the clinical developments do not seem to be directly related to raised intracranial pressure or to subarachnoid hæmorrhage, though the latter was present in some cases The eventual recovery of Denny-Brown's patients made it impossible to study the underlying pathology, but, mainly on account of the prominence of bradycardia, he tentatively ascribes the condition to contusion of the medulla oblongata Slowing of the pulse was associated with other evidences of vasomotor instability and was observed only with the patient absolutely at rest, any activity was always followed by acceleration of the pulse, which was maintained for 2–3 hours after return to bed Denny-Brown's experience of gunshot wounds of the head in the present war, taken in conjunction with records of similar cases in the war of 1914–18, leads him to postulate that the entry into the skull of small fragments of metal communicates little momentum to the brain as a whole, but the high velocity of such fragments transmits pressure to the foramen magnum and leads to concussion or contusion of the medulla oblongata This suggestion may turn out to be fundamentally important in the pathology of concussion in general, and may explain why so many victims of head injury die within the first 24 hours The brain in these subjects often shows an amount of trauma which seems insufficient to have caused death In this connexion Denny-Brown and W R Russell[2] have found, by experiments on cats under Nembutal anæsthesia, that concussion, even resulting in death, associated with cessation of respiration and rise of blood-pressure without macroscopic lesions in the brain stem, may be produced by a blow when the head is free to move and yet will not be produced by the same blow when the head is firmly fixed, they justly argue that the concussion must therefore have been due to the acceleration imparted to the nervous tissues Possibly microscopic examination would have supplied further information

Schaller, Tamaki and Newman[3] have studied the distribution of petechial hæmorrhages by serial sections in a number of rats which were severely but not fatally concussed The petechiæ were widely distributed throughout the brain but were noted particularly in the deeper tissues, including the basal ganglia and the brain-stem There were no large hæmorrhages or softenings In animals surviving for long periods such foci showed evidence of repair These workers stress the vascular basis of concussion and trace the production of petechiæ from vasodilatation leading to stasis, anoxæmia and permeability of the vessel wall They found no evidence of damage to the myelin sheaths, no gliosis remote from the vessels, and no progressive pathological involvement of the vascular system Although they did not lay any special emphasis on damage to the brain-stem their finding of petechiæ in this situation in so many examples fits in with Denny-Brown's conception Possibly the control of consciousness may turn out to be situated in this part of the brain Thus Cairns,[4] in his account of gunshot wounds of the head in 1940, says "it is remarkable that cases of foreign body penetrating the frontal and parietal lobes showed no loss of consciousness, whereas a foreign body passing through the petrous bone into the cerebellum produced unconsciousness which lasted several days Is the unconsciousness (concussion) of closed head injuries of civil life due," he asks, "to commotion of the whole brain, or to damage to some part of it, such as the brain stem ? "

SOCIAL HYGIENIST WANTED

Sir Drummond Shiels, who has been medical secretary of the British Social Hygiene Council for some years, is retiring from this post, though he will still act as medical adviser As announced in our advertisement columns, the council are in need of a successor, who must be a doctor familiar with the problems of sex education and of venereal disease Much of the council's work is now concentrated on teaching young people between 16 and 25 the elements of sex knowledge and guiding them on sex behaviour The medical secretary's duties, which are part-time, are to travel on the council's behalf in the provinces, discussing their difficulties with medical officers of health and V D officers, giving lectures, and keeping a professional eye on the council's courses of instruction

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Dr J E A UNDERWOOD has been appointed senior medical officer to the Board of Education in succession to Dr J Alison Glover, who reaches the age of retirement on April 10 Dr Underwood had served for four years in the R A M C and was an experienced school medical officer before joining the board's staff in 1925 In that year he was secretary to the Departmental Committee on defective vision in children and since 1928 he has been chiefly responsible for advising the board on schools for blind and deaf children The 1931 report on partially sighted children was largely his work and he represented the board at the world conference in New York on the welfare of the blind He takes up his new responsibility with a wide knowledge of the school medical service generally and of the work of special schools

Dr JOHN SMYTH MACDONALD, F R S, who died on Saturday last at Bridge of Allan, held the Holt professorship of physiology at Liverpool University from 1914 to 1932 after having occupied the similar chair at Sheffield for 12 years His work on the function of muscle and nerve was widely known He was in his 74th year

THE following have been appointed honorary physicians to the King for three years Sir HENRY BASHFORD, chief medical officer at the Post Office, Sir WELDON DALRYMPLE CHAMPNEYS, deputy chief medical officer at the Ministry of Health, Dr J M MCCLOY, chief medical officer at the ministry of home affairs for Northern Ireland, Prof W W C TOPLEY, F R S, head of the emergency public health laboratory service, Dr R VEITCH CLARKE, medical officer of health for Manchester, Dr W G CLARK, medical officer of health for Edinburgh, Dr JAMES FERGUSON, medical officer of health for Surrey school medical service from 2% in 1926 to 0 77% in 1926 This scheme provides supervisory centres to which children suspected of rheumatic diseases are referred. Children who are fit for ordinary education return to school but are kept under supervision; those who need treatment are referred to rheumatism units outside London, and those cardiac cripples who can benefit by appropriate education (about 16%) are sent to special schools In a standard year there are usually about 2000 children attending such schools

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[1] Denny Brown, D E *Lancet*, March 22, 1941, p 371

[2] *J Physiol* 1940, 99 153

[3] Schaller W F, Tamaki, K and Newman, H W *Arch Neurol Psychiat* January 1941, p 1

[4] Cairns, H *J R Army med Cps*, January, 1941, p 11

A similar scheme in its full range could be applied by local authorities to all state schools, and impoverished areas should receive grants from national funds for the purpose.

RESEARCH

There remains research the most urgent need of all For this the Empire Rheumatism Council is willing to assume responsibility, with what help can come from the Medical Research Council, the various medical research foundations and the medical schools In addition, the treatment centres, once in action, would become a source of statistics capable of answering many of the questions still left teasingly open

MEDICINE AND THE LAW

Aortic Disease an Accident

In the case of Tyler *v* New Hucknall Colliery, mentioned lately in this column, the Mansfield county-court judge held that the perforation of a duodenal ulcer was not an accident within the Workmen's Compensation Act More recently in *Tennant v Coppice Colliery Co* the Walsall county-court judge decided in the workman's favour where a blow, received in the course of his work was said to have accelerated the disease of the aorta The man worked for two days afterwards, stayed away on the third day, gave up work after a brief attempt on the fourth day and went to hospital where he was X rayed He died suddenly about a fortnight later The pathologist who made a post-mortem examination for the purpose of the inquest gave evidence before the county-court judge which was consistent with the death being in no way due to the blow There was, said two medical witnesses a failure of the blood-supply in consequence of the blocking of the arteries The calcification of the aorta was exceptional; the calcareous matter had been accumulating over a long period and the accident had no effect upon it The judge however pointed out that the employers had been unable to explain why the workman, having had nothing wrong with him before the blow had suffered pain after it Drawing the inference that the accident had markedly accelerated the development of the condition of the aorta he awarded £600 compensation

Inadmissibility of Coroner's Verdict

In Tennant's case, mentioned above, the coroner's verdict had attributed death to the occlusion of the right coronary artery The verdict of an inquest is, of course of no value in other courts This was clearly illustrated in the tragic case of Pollock *v* Pollock this year Last June a devoted husband, worried and oppressed by the war news, shot his wife and then shot himself His wife had left her estate to him, but the law does not allow a murderer (or anyone who claims through him) to profit by his crime The husband had killed his wife If he was insane at the time, it was not a murder, but the burden of proving insanity lay upon the husband's representatives and, the husband being dead they were not likely to be able to discharge it The wife's executors applied to a Chancery judge for advice They were told that they should act on the assumption that the husband had murdered his wife, and they should not hand the wife's estate over to the husband's representatives A coroner's verdict had recorded that the husband killed his wife while his mind was unhinged, but Mr Justice Farwell was unfortunately prevented by law from taking note of the facts determined by the inquest

Workman's Denial of Disease

A workman, on entering a mining company's employment, untruthfully made a written statement that he had never suffered from nystagmus The disease appeared and he qualified for compensation on the certificate of the examining surgeon who fixed the date of the disability The company exercised its right to have the workman examined by a surgeon to whom the patient admitted that he had previously suffered from nystagmus This surgeon reported the disability to be a severe case and recorded the patient's admission. The Workmen's Compensation Act purports to disqualify a claimant who has made a false denial on entering employment The company nevertheless paid the man compensation at the full rate until, many months later, payment was discontinued on the ground of the false representation What the Act says (in paragraph (*b*) of section 43 (1)) is that "if it is proved that the workman has, at the time of entering the employment, wilfully and falsely represented himself in writing as not having previously suffered from the disease, compensation shall not be payable" The county-court judge held that there was false and wilful misrepresentation, but he also held that the paying and receiving of compensation formed a binding and concluded agreement between the parties and that all questions of liability were thereby settled The Court of Appeal has upheld the county court Section 43 (1) (*b*) is not an absolute prohibition. Those initial words "if it is proved" create an issue of fact for an arbitrator to try This issue can be the subject of an agreement between the parties If the employers chose to pay compensation without availing themselves of such precautionary safeguards as the lawyerlike words "without prejudice," and if they offered no explanation, their generosity was fatal

SCOTLAND

POLISH MEDICAL FACULTY IN EDINBURGH

THE discussions which have been in progress between the British and Polish governments and the university and municipality of Edinburgh regarding the institution of a Polish medical faculty in Edinburgh achieved their end in the McEwan Hall of the University on March 22 Monsieur Wladyslaw Raczkiewicz, president of the Polish Republic, formally constituted the faculty and named its members Sir Thomas Holland, vice-chancellor of the university, said that though wars had occurred in every century, countries had been invaded and local institutions had been brought under the control of conquerors never before, since their rise in the fourteenth century had universities in any country been ruthlessly destroyed For precedent it was necessary to go back another eight centuries to the time when the schools of the Roman Empire were swept away by other Teutonic savages, who by that means inaugurated the Dark Ages Among the first of the universities founded with the revival of learning was the Jagiellonic University of Cracow which maintained its reputation as a great home of liberal education for just 540 years until, along with its sister universities, it was lately destroyed The Polish universities had produced poets and historians of great distinction of whom, because of our linguistic limitations, we knew too little But of those Poles who had published their works in the universal language of music everyone knew of Chopin and Paderewski The scientific and a wider world, too, revered the names of two famous Cracow graduates, Nicolaus Copernicus who in a double sense revolutionised astronomy in the sixteenth century, and Marie Sklodowska, known to fame as Madame Curie Round a nucleus of a dozen professors and about fifty students he said, would grow a school of medicine so vigorous that its Edinburgh cradle would barely be large enough to hold it until it was free to return again to its native land, there to inaugurate a new era as the foundation faculty of the rejuvenated Universities of Poland Sir John Anderson conveyed to the new faculty the best wishes of the British Government, in reply Professor Kot the Polish minister of the interior, traced many academic associations between Poland and Scotland in the past Prof. Sydney Smith, dean of the faculty of medicine, also welcomed the newcomers Professor Jurasz, the newly appointed dean of the Polish faculty, looked forward to a time when they would all meet as free men, in free doubtful whether the time was then opportune to publish it, now Lord Horder feels that "considerations of humanity, of national safety and true economy plead for some immediate effort to check rheumatic disease" What he has to say is addressed to all who are interested in public health, and he writes without using unnecessary scientific terms

THE PUZZLE

In stating the extent of the problem he notes that adults with rheumatism in England and Wales can be conservatively estimated at over a million, and the economic loss among insured workers at £17,000,000 a year Cases of juvenile rheumatic disease, calculated on the basis of the statistics of the L C C medical service, he puts at 200,000 in Great Britain

Our knowledge of the ætiology of rheumatic disorders is still vague Discussing possible factors in its causation, Lord Horder shows how far our questions were ahead of our knowledge, and pleads on almost every page for more research In juvenile rheumatism we can say that infection, bad housing and perhaps heredity, defective diet and scanty clothing play a part In adult rheumatic disorders occupations figure largely, especially those which invite small injuries, bruising, repetitive movements and cramped attitudes Climate, of course, does its share "the old man carries the almanack in his bones" Other factors suspected of contributing are focal sepsis, glandular dystrophy, some inherited or acquired biochemical flaw, diet, heredity, mental or emotional disturbance, housing, injury and geological conditions Against most of these can be set a question mark, we do not know how much or how little they act as rheumatic provocants Uniform record-keeping and a thorough study of cases should settle some of these questions, others require intensive work in the laboratory

WHAT CAN BE DONE

Little as we know about the cause of diseases grouped under the heading of rheumatism we can—contrary to common belief—do a good deal for them Juvenile rheumatism presents a problem of its own, calling for early diagnosis, determined treatment and steady aftercare For the chronic rheumatic diseases of adults much can be done by physical treatment in its several forms, massage, pyrotherapy and shock therapy, physical exercises, drug therapy, orthopædic measures, colonic lavage and vaccines Lord Horder assesses the relative value of the various remedies cautiously but is able to quote figures from many treatment centres showing the excellent results obtained by a judicious and persistent attack on the symptoms, no claim is made that any treatment now in use strikes at the unknown cause

At the Devonshire Royal Hospital 3062 patients were admitted in 1937–38, of whom 2617 were discharged cured or much improved At the Royal Mineral Water Hospital at Bath 62% of patients were cured or relieved in the eighteenth century, 88% in the nineteenth, and 95% (so far) in the twentieth The British Red Cross Clinic, treating out patients only, claims that 60 3% of patients are freed from objective symptoms and 29% improved, leaving a balance of 11% An American treatment centre reports that 75% of cases are cured or improved, 20% are refractory and 5% hopeless

This is an encouraging picture, suggesting that if we can place appropriate treatment within reach of all who need it the practical problem is largely solved

THE PLAN

Lord Horder suggests that this could be done by setting up, on a regional basis, specialised treatment centres each of which would supervise a number of local centres in its own area The special centres would diagnose and treat both inpatients and outpatients referred by local treatment centres, hospitals or private doctors Each special centre would be under the charge of a whole-time permanent medical officer with special experience of rheumatic disease, and would be staffed by qualified assistants, paid or voluntary, including workers in every branch of physical therapy, radiology, hydrology and chiropody The centre would also have access to a full consultant staff of physicians and surgeons, including an orthopædic and manipulative surgeon, a dental surgeon, a gynæcologist, a rhinolaryngologist, a pathologist and a radiologist Ten to fifteen such centres, it is estimated, would be sufficient for Great Britain

Local treatment centres should of course be much more numerous, and would treat outpatients only, each centre being equipped to deal with anything from 50 to 250 patients a day, depending on local needs The local centres would provide massage, remedial exercises and the simpler heat and electrical treatments The staff would be trained in massage, one of them having in addition a qualification in hydrology, and one a full nursing qualification Patients would be received on the recommendation of their own doctor, remaining under his treatment for everything except their rheumatic symptoms Is it, perhaps, questionable policy to divide the patient up according to his diseases in this way? In theory it seems unsound and though in practice it might work out fairly well, it deserves careful preliminary consideration The medical officer in charge of a local treatment centre would not necessarily be on whole-time service but might have charge of two or three centres, he should have special experience in the diagnosis and treatment of rheumatic disease Through close liaison with the special treatment centres, consultants would visit the local centres when their advice is needed

One aim of the plan is to educate the patient in the understanding and care of his own disease, and this will be achieved at the special treatment centres, by lectures, and films, which will instruct him in the importance of such things as diet, rest, clothing and exercises It will even be possible for some patients to carry on a simple course of treatment at home, thus avoiding frequent visits to the local centres, in this they will naturally need the supervision of skilled social workers This system has worked well as organised by the Mayo Clinic arthritis department

Another aim of the plan is to train sufficient medical personnel in the diagnosis and care of rheumatism by arranging special postgraduate courses and lectures, not only for those who are staffing the clinics but for school medical officers and any other doctors who are interested Some of the special centres, it is hoped, will be attached to university medical schools, and the medical staffs of all of them should be equal to the teaching task required of them

The plan will divide patients into three sections a large group who after a short period of institutional treatment and an educational course would be able to carry on home treatment with periodic visits to a local centre, another large group who could attend regularly at a treatment centre, and a small group who would need inpatient care or treatment which could only be given at a special centre

The cost of the scheme would not be as great as appears at first sight The special centres would be accommodated in existing hospitals, clinics and spas which could provide the necessary equipment, the local centres could be housed in hospitals, pit-head baths, public baths, welfare premises of factories or if necessary in huts put up for the purpose

The cost of treatment could be met in full by those who could afford it, at a concession rate (for example, through the Hospital Saving Association) by those with less means, and by an extension of the National Health Insurance system for insured workers At present there are very few rheumatism treatment centres at which approved societies can arrange treatment for their members, and it is scarcely just that a man in London or Sheffield should have opportunities for treatment which are denied to his fellow in some other part of the country All contributors, as Lord Horder points out, should be on an equal footing He sees no need for elaborate centres or equipment, believing that research will shortly give us fuller knowledge and thus more control of the diseases treated, and that early diagnosis and treatment will reduce the morbidity from rheumatism

RHEUMATIC DISEASE IN CHILDHOOD

The problem presented by juvenile rheumatism is of course entirely different Here Lord Horder believes the best hope lies in a national plan on the lines of the L C C rheumatism scheme, which has helped to reduce the incidence of recorded heart disease in the L C C

In England Now

A Running Commentary by Peripatetic Correspondents

WE still don't seem to be getting full value from the visiting-team system, and the faults are not wholly on either the hosts' or the visitors' side. When a hospital is threatened with a big take-in it bursts with pride over its unlimited capacity. "Want assistance? Good Lord, no! We can deal with anything. Ask for a visiting team—surgical, resuscitation or nursing? We should think not!" Then when after 48 hours' continuous work they at last send for help the team finds them tired and cross; nobody receives them or tells them what they are wanted for or where things are kept. There is no cup of tea, no handshake. The visiting team, on their part, making no allowances for exhaustion, utter loud criticisms of the lack of welcome, of house-men and nurses, and of the deference which "consulting surgeons" are used to. Keenness is all very well, but no-one is going to do his best work when he is asleep on his feet, and it is mere foolishness to try when relief can be got. The hospital staff—medical, nursing, or lay—should knock off before they are compelled to by sheer fatigue, and those in charge should realise that their job is to foretell when this limit is likely to be reached and ask for help in time. When the team arrives there will then be juniors fresh enough to serve the strangers and make them free of the hospital's resources. The visiting team can help by putting themselves in their hosts' place, mentally as well as physically, and by bringing with them some dog's-bodies of their own, students or probationers, to fetch and carry.

* * *

The lights in the train suddenly went out, and we knew that there was an air-raid in progress, but we ran on at a good pace in the bright moonlight, and I got to my home town only a little late. The station was in darkness, save for the shaded light belonging to the ticket collectors, and so we passed out into the streets to the noise of gunfire, the zoom of planes and the frequent crumps of bombs. There were no taxis, and I did not care at all for the prospect of walking the two or three miles home; so I decided to hurry along to my hospital, which was a good deal nearer, and give a hand in whatever was doing. I caught up with a soldier—an "old sweat"—and we walked in step together. "What a bloody party," he said as a sudden brilliance lit up the sky, and we saw a "Molotov chandelier" dropping down. "That's so-and-so," he went on, pointing to a huge fire behind us, "Jerry knows where he bloody well is." (I found out later that it was nowhere near the important so-and-so.) Our ways parted and he clumped off into the moonlight, with a five-mile walk in front of him.

At hospital no casualties had yet come in, and my houseman took me to the residents' room for tea and toast. One of the other housemen came in from his shift of fire-watching, and we discussed where the fires in the town might be. Then came the news that a casualty had come in, and we trooped down to the reception hall. It was rather an anticlimax to find that he was an old man with a cerebral hæmorrhage. But soon a real air-raid victim came in—a man who, standing at his door watching for incendiaries, had been thrown out into the street by the collapse of the house under a H.E. bomb. He had a fractured tibia and fibula, and he was covered with dust and dirt, his face as black as a coolie's. The next was a middle-aged Roman Catholic priest who, being unable to find a bag of sand in the street, had jumped on an incendiary bomb to put it out and had found it explode as he landed on it. Then came a couple of walking cases—bruised ribs from falling bricks, and a fire-watcher whose tendo achillis had been trodden on by a horse. He sat indignantly in a chair, nursing his sore heel and appealing to me. "Why need the chap have interfered with the rope?" he said. "What chap and what rope?" I asked. "Well, when the bomb fell, I went to get the three horses out of the stable, and I'd got two out all right, and then this fellow comes along and grabs hold of the rope and mucks everything up. He'd no cause to get hold of the rope, I was managing it all nicely." "Were they your horses, then?" I asked. "No, they'd nothing to do with me, you know, but I knew they were there and had to be got out and I was managing nicely. He'd no cause to get hold of the rope." I looked at his foot, rather for form's sake, because as a physician I know little about these things; obviously he was not badly hurt, only bruised and sore. "Just like another famous chap," I said. He looked at me quizzically, "What famous chap?" "A fellow called Achilles." "Never heard of him," he said, with the generous air of letting me have my little joke, and an obvious relief that things were not beyond a joke.

An air-raid warden white with dust, who had brought in the man with the fractured tibia, then tackled me. "Eh doctor, d'you think there's any chance of my getting my best Sunday tie back again, it's round that first-aid splint? I expect I'll get a George Medal for tying up that leg! But I'd like that tie back again, I feel so untidy without a tie round my collar." Even the fractured tib.-and-fib. on the stretcher ("Records" were just finishing his particulars) had to smile. Then came an elderly woman from the same incident, with great raw gaps of flesh torn out of her arm and leg, badly shocked, with a strange, uncanny look of puzzled questioning. Soon more cases were coming in, and I went along to the resuscitation ward. Already the tib.-and-fib., the priest and the elderly woman were being got into bed and warmed up. More cases arrived in the ward. There was an oldish man with a head wound, his clothes wringing wet, profoundly shocked, dazed and shivering. I never found out why he was soaked and he could not tell me; but when I gave a hand with the surprisingly awkward task of taking off his wet and clinging trousers, he roused up and said angrily, "Here, what are you doing that for?" Two policemen out of a posse of four who had been sent out to clear the streets round an unexploded bomb were carried in, nearly dead, with the skin blasted from their faces. One of our policemen had been blown a distance of fifty yards or more, and three days later they were still finding in the mass of rubble pieces of uniform and limbs belonging to the other two, as well as the bodies of other poor folk who had been buried. Happily our two constables still survive.

A middle-aged warden carried in a bundle, telling us that it was an unidentified child rescued from what had been a group of modern tenement dwellings. It was a little boy about a year old, his face waxen where it was not black with grime, with a pulpy wound on the back of the head, and a great gash across the forehead. For several hours we watched the baby's life ebb, and then slowly come back again with the appropriate resuscitation measures. An auxiliary fireman came with one of his mates, who had a deep wound into the knee-joint. They had been fighting one of the big fires in the town, playing their hoses from an adjoining building. An H.E. bomb hit their building, and my informant found himself standing on a beam high in mid-air. He grabbed at his pal and held him for a second or two; when the man slipped out of his grasp, he fell on the debris of brick and building and not underneath it, and this saved his life, for three or four other A.F.S. men were crushed to death on the spot. His friend turned to me with savagely clenched fist. "Shooting's too good for That Man," he said.

All this time confident young registrars and housemen, sisters and nurses were getting on with their various jobs, and the emergency theatre was now in action. The tib.-and-fib., the priest, the elderly woman and others were back in bed, recovering from their anæsthetics. I was in the anteroom of the theatre, having a cigarette with my houseman, when suddenly there was a heavy explosion. My houseman dived under the theatre trolley, and rather like a slow-motion picture I dropped on to the floor on my face, listening to what sounded like the roof falling in, and foolishly aware that after all I had not even the cover of the thin aluminium top of the trolley. Then we got up again, and looked around the hospital to see where it had been hit. But it had not been hit; a very heavy bomb had landed on a building across the way. I rushed up to my own wards; glass and dust were all about the corridors, all the windows of one of my wards were broken and some in the other, but the patients were all safe. The night nurses had the situation in hand, the patients were steady and some could even crack a grim joke about it. It was the same throughout the hospital—glass and dust and soot, no casualties and no panic.

countries, in a free Europe The honorary degree of LL D was conferred on President Raczkiewicz

It was subsequently announced that the public-health committee of Edinburgh town council had approved a proposal that, in connexion with the Polish medical school, Polish patients should be treated at the Western General Hospital The Department of Health for Scotland was prepared to allocate up to 150 beds under the Emergency Hospitals Scheme for the purpose The beds set aside for Polish patients would be staffed by Polish doctors and tended by Polish and British nurses Thus the Polish school receives an important addition to the teaching facilities which are already available, and indeed in use, in the Royal Infirmary

PARATYPHOID OUTBREAK IN THE HIGHLANDS

A considerable outbreak of paratyphoid fever has occurred in the counties of Moray, Nairn, Inverness, Ross and Cromarty The primary wave is largely over and a secondary wave is now expected The incidence of the epidemic has been greatest in Ross-shire, particularly at Alness, where Bridgend School has been closed It is thought that the organism has been spread by food rather than by the water-supply, but so far the source has not been identified

BRITISH ORTHOPÆDIC ASSOCIATION

THE postponed 1940 annual meeting* of this association was held in Oxford on Jan 3, under the presidency of Prof T P MCMURRAY, when the following short papers were read

Mr. A L EYRE-BROOK and Mr K H PRIDIE (Bristol) had reviewed by clinical and X-ray examination the progress after one year of 47 patients out of 75 treated for *fracture of the neck of the femur* by manipulative reduction and the insertion of a Smith-Petersen nail (Hey-Groves technique) Bony union was proved in 58% of patients and in the whole series of 75 there had been a fatality of 5 3% Aseptic necrosis of the capital fragment had occurred more often in patients under thirty The importance of the fracture shaft angle of Pauwels was emphasised If this angle was low (below 30°) the results from nailing alone were poor and a fibular graft should be inserted as well

Mr NORMAN ROBERTS'S (Liverpool) description of the indications for *excision of the patella* was based on a series of 20 cases He discussed the uses of the patella and emphasised the following points —

1 Recovery of function after excision is not so rapid as is often thought, though it is more rapid than after suture of the patella

2 After excision flexion movement is usually full or is possible at least to the right angle , there is often a limitation of full extension and the quadriceps is often weaker than normal

3 Excision is advisable in all comminuted fractures in both young and old patients , and in transverse fractures in middle aged and old patients

4 Transverse fractures in young patients should be sutured If the fragments are very unequal in size it is easier to excise the smaller fragment and to suture the rectus or patellar tendon efficiently to the larger fragment

5 Derangement of the knee due to recurrent dislocation of the patella cannot usually be cured by excision of the patella

6 Good results sometimes, but not always, follow excision in osteoarthritis of the knee, particularly if the arthritic changes are mainly in the patello femoral compartment of the joint

Mr G E THOMAS (Liverpool) had achieved *correction of scoliosis* in 16 patients , usually by recumbency on a Thomas frame with longitudinal traction and counter traction applied via the head and legs and three-point pressure on the apex of the convexity and the extremities of the concavity. To exert lateral pressure special pads operated slowly by a screw mechanism of the Thomas wrench type was employed Failure to achieve correction had occurred in very high and very low curves, in severe long-established curves, and in those cases in which there was gross rotation out of all proportion to the lateral curvature

Mr W S DIGGLE (Liverpool) reviewed a series of *fractures of the external tuberosity of the tibia* For those cases in which there was gross comminution and depression of the fragments he had found open operation, replacement of the fragments and screw-fixation the most effective treatment Most of his patients treated in this way had been able to return to work in about six months

Mr G K MCKEE (Norwich), who spoke on the treatment of *compound fractures of the leg*, advocated fixed skeletal traction on a Thomas splint for both tibial and femoral fractures, simple and compound For tibial fractures a Steinmann pin was inserted transversely through the upper tibial fragment and through the os calcis or the lower fragment The pins were fixed firmly, after reduction by manual traction, to the lateral bars of the Thomas splint by a special clamping device For femoral shaft fractures one pin below the fracture, fixed in a similar way to the Thomas splint, was employed To avoid undue pressure on the ischial tuberosity or groin the splint was tied to the end of the bed which was then elevated The advantage of this method, in contrast with the closed-plaster technique, was discussed in the light of its success in 30 compound and 20 simple fractures

Mr F C DWYER (Liverpool) considered that *Kier bock's disease* is probably due to a fibrosis, resultin usually from trauma, of the dorsal ligaments attached t the carpal semilunar From an experience of 34 patients in 10 of whom the damaged semilunar had been removed Mr Dwyer felt that conservative treatment offered th best results in a condition which always left a permanentl damaged wrist

Mr J Z YOUNG (Oxford) outlined the preliminar results of the experimental work now in progress a Oxford on *nerve regeneration and nerve grafting* i rabbits At the start he warned against applyin completely to man experimental findings, even thoug they had been very accurately demonstrated in animals The need for a qualitative method of comparison betwee different procedures for nerve repair was emphasised The rate of growth of new fibres was adopted as a criterion and a method of estimating it developed The rate for rabbits, found to be about 4 mm a day, was the same in all nerves and approximately the same at al levels Certain suture material gave severe reactions—e g , catgut and pigmented silk White silk, woman's hair sutures, and fibrin "glue" produced the least reaction Return of function was often rapid and rapid recoveries occur even after full Wallerian degeneration They are not due to physiological interruptions such as arise after ischæmia but which clear up even more rapidly Mr Young pointed out that the delay between interruption and recovery of a nerve's conduction has three parts

1 In the junction scar—probably about 20 days in man

2 In the nerve itself, during the growth of fibres down it, which probably takes place at the rate of 2 5 mm a day in man

These two phases comprise the anatomical delay

3 In the muscle—the functional delay—about 40–60 days in man The delay in the muscle seems to be shorter if the muscle has been denervated only for a short time, a finding strongly in favour of early suture

The problems of bridging gaps were discussed It had been demonstrated that nerves could not be stretched suddenly more than 10% of their total length , and that increase in length from gradual stretching was probably due to growth in length of the nerve rather than to stretching Autografts had given most success in rabbits and there were some encouraging results from homografts

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* This report was delayed by enemy action

MEDICAL SUPPLY ASSOCIATION, Ltd , draw attention in their catalogue to a new electromedical switch-table (Universal Electrostat, series III) This incorporates a metal rectifier and is claimed to have none of the disadvantages of motor generators or valve rectification. A treatment-table (Panapoise) combines maximum stability in all positions with wide range of adjustment and ease in movement of individual sections Their featherweight Schnee baths are constructed of metal with moulded rubber linings , they are unbreakable and should prove much easier to handle than the cumbersome earthenware type in common use.

Public Health

From the Annual Rèports

TUNBRIDGE WELLS

Dr F. C Linton's report of the borough of Royal Tunbridge Wells is fairly comprehensive Tunbridge Wells covers 6034 acres, has a population of about 35,000 and in 1939 its birth-rate was 11 9 and its crude death-rate 15 6, which on multiplication by the com- rability factor of 0 73 becomes 11 4 Cancer mortality as 2 1 and tuberculosis mortality 0 37 Here we have nother "artificial" population, departing from normal the reverse way to that of Dagenham Comparison the two brings out the truth that differences in health atistics which occur naturally in populations of different mpositions are much greater than those between the est and worst services, or the healthiest and most nhealthy years and places which are met with in ntain In the closing years of the last century the ge-distribution of all deaths in Tunbridge Wells was oughly one-fifth under one year, two-fifths between e and 65 and two-fifths over 65 years of age In 939 the distribution was 9 under one year, 164 etween one and 65, and 379 over 65 years of age he infant-mortality rate in 1939 was 21, the lowest ecorded in the borough and less than half the average ate of 46 1 for the past ten years So many districts ave recorded infantile mortalities below what we ormerly feared was the irreducible minimum that these xtraordinarily low rates cannot be due to chance They re the resultant of low rates for deaths from all the rincipal causes including malformations

LIVERPOOL

Fourth in population of the cities of Great Britain, and itself the metropolis of the port of Mersey, Liverpool has always been of particular interest to students of public health, for it was the first place to appoint a medical officer of health and at the outbreak of the present war was the centre of the controversy over the reform of units of health administration Its population at present is 822,000 but it is not a self-contained unit, being continuous with Bootle on the north and joined to, rather than separated from, Birkenhead by the Mersey The annual reports of Liverpool have always been comprehensive, and though that of Dr W M Frazer for 1939 is cut down to about half, it is still one of the most complete local reports for that year Reduction has been steady in all causes of infant death since the beginning of the century, but greatest in diarrhœal diseases, from 57 to 7 , in tuberculosis from 6 to 0 8, and in nervous diseases, from 22 to 8 7 ; the last presumably includes convulsions The least reduction was in deaths due to prenatal causes, from 51 to 33 Since 1871, the percentage of total deaths due to infectious diseases, other than diarrhœa and influenza, has fallen from 19 2 to 2 7 , that of tuberculosis from 13 5 to 7 , that of respiratory diseases from 20 2 to 11 1 , that of diarrhœal diseases from 10 to 4 5 On the other hand, the percentage of all deaths due to cancer has risen from 1 4 to 12 1 The reduction of deaths from what were formerly called zymotic diseases has been almost regular during the 70 years , that of diarrhœal diseases started only at the beginning of the present century, and that from respiratory diseases only since 1930 This illustrates the course of preventive medicine during the period Hygienists in 1870 knew that fevers could be prevented , it was not until the severe epidemic of infantile diarrhœa in 1899 that they were convinced that that disease too could be prevented, and the prevention of respiratory diseases, other than phthisis, did not seem to be practicable until modern health practice had made considerable progress The increase in cancer is admittedly a black spot on preventive medicine, even though the increase is partly artificial being due in large measure to the higher proportion of old people in the population and improvements in diagnosis Preventive medicine never assumed that it could prevent us from dying , it was determined to prevent us from dying young and has largely succeeded in doing so But it did not pay much attention to the aged until recently ; at the outbreak of the present war it was considering what could be done to help the aged to die comfortably.

In 1939 there were 8 cases of anthrax in Liverpool ; all were treated with serum and all recovered Only 1 was on the arm, 4 were on the back of the neck and 2 on the temple ; in view of this distribution, the success of treatment is remarkable A comprehensive table of the comparative case-rates of diphtheria, 1933–39, in inoculated and uninoculated subjects brings out that in the uninoculated the annual incidence in persons under 10 years of age was 11 3 per 1000 ; in the inoculated it varied from 1 5 in those treated by F T to 3 in those treated by A.P T The numbers are sufficiently large to give significant results The unfavourable results with A P T may have been due to the "one-shot" method, which has now been discarded. There were 70 cases of cerebrospinal fever, about the average annual number in recent years , the fatality was 40%, the lowest in the past 10 years, but still much higher than what is expected with recent methods of treatment Encephalitis lethargica has died out ; the last notification of an acute case was in 1937 and the last death in the acute phase in 1934 , since 1935 there have been 51 deaths of old cases

SOMERSET

The physiography of Somerset is as diverse as that of any county in Britain but its industries, though varied, are mainly agricultural Those who know Somerset will be surprised to hear that, judged from the comparable death-rate, which in theory is a good guide, Street comes out as the healthiest district Ilminster, which comes out at the bottom of the list had no infantile mortality, a distinction it shared with Wells and Wellington The county now has five clinics for mental cases under the Mental Treatment Act, 1930 Although 118 sessions were held, the total number of patients seen was only 73, which leads Dr Davidson to say that the facilities available are being *comparatively* little used by practitioners. Neither the general public nor the medical profession has yet got acclimatised to the Mental Treatment Act , this is hardly surprising seeing that the act is but ten years old *and* reverses what may be called the ideology of mental disease which had been current in the country for centuries Both patients and doctors are inclined to look on mental clinics as *means* of getting people into institutions. instead of keeping them out, which is what the clinics are intended for.

BERMONDSEY

Dr D M Connan in his report of this metropolitan borough tells us that 90 8% *of fatal* cases of phthisis were notified prior to death, but of fatal other tuberculosis only 25% were notified , there were, however, only 4 cases of the latter In these days, apart from phthisis the only manifestation of tuberculosis in which direct fatality is at all common is meningitis, which for obvious reasons is *infrequently* notified before death In Bermondsey the Minister of Health has sanctioned the free supply of insulin by the public-health department to diabetics in poor circumstances , in American cities such a provision is usual and it should be here, but up to the present it has been exceptional In the obstetrical department there was only one call for the opinion of the consulting obstetrician and none for bacteriological examination The latest puerperal pyrexia order requires a bacteriological examination of the lochia in all cases notified , but the order was born dead, for it does not say who is *responsible* for the examination, so it is always somebody else's business and is consequently left undone In 1939 the infantile mortality-rate fell to the low level of 37, which will surprise those who know Bermondsey, though the rate usually compares favourably with those of other London boroughs Bermondsey has a solarium for light treatment electrotherapy and massage In the first seven *months* of 1939 the number of persons who received treatment was 1482 and they made 30 693 attendances Unfortunately the clinic was closed in August and did not reopen until December

STIRLING

Dr D M Grant, interim medical officer of health, mentions the difficulty which may arise of obtaining sufficient supplies of insulin during the war - we hope this matter is receiving the attention it needs In September, 1939 Stirling received 2300 evacuees from the Glasgow district Of these, 827 children were examined at the

I went back again to the resuscitation ward, which was nearly full We got some more beds in, and admitted more The baby with the head wounds did not seem to be rallying A woman who had been sitting in front of her kitchen fire had been badly burnt on the face, legs and abdomen when the blast of a bomb blew the fire out into the room A young man, bending over the kettle to make some tea for his old mother had suffered a fracture of the spine when the roof fell in on him A strapping young soldier, caught in the middle of the town when the raid began, was brought in unconscious after being hit by falling masonry An old woman had several ribs cracked and a nasty shoulder wound, she died soon afterwards There were more children, crushed under falling houses Two old people who were still alive when put into the ambulance were dead when it reached hospital A couple of young Roman Catholic priests came in and flitted about the ward, doing their offices for the gravely injured and comforting the others of their flock I came to the bedside of a white-faced, motionless young woman, and felt her pulse On the other side of the ward the baby with the head wounds started to whimper protestingly under the electric warming cradle—rather a hopeful sound to the professional ear The young woman opened her eyes and said "Is my baby very badly hurt?" "He's got a nasty gash or two," I replied, "but I think he's going to be all right" A ghost of a smile passed over her face and was gone, and she closed her eyes again It was her baby, and she too had been dug out of the debris, badly crushed, an hour or two after the child She still survives, but her baby died thirty hours later

My colleague the honorary surgeon had arrived, and we went round the beds together, weaving our way in and out of the stretchers which with their occupants were now filling up a large part of the floor Such cases as were fit for operation in the course of the next hour or two could well be left to the younger men, so we made a tour of the wards As we were doing this the all-clear went, so we could use our torches a little more freely The moonlight was streaming in through gaps which had once been windows, making odd glinting patterns on the floors of the wards Outside it was a lovely night, and some imp of memory flashed on the screen of my mind the scene of Lorenzo and Jessica's love-making

Sit, Jessica Look how the floor of heaven
Is thick inlaid with patines of bright gold,
There's not the smallest orb which thou behold'st
But in his motion like an angel sings,
Still quiring to the young ey'd cherubims
Such harmony is in immortal souls,
But whilst this muddy vesture of decay
Doth grossly close it in, we cannot hear it"

We took a provisional decision on the extent to which the hospital could continue to function, and gave our instructions for the coming day's evacuation of a large proportion of our patients to hospitals elsewhere Downstairs the work still went on, and would go on well into the afternoon, before the resuscitation ward could be cleared and tidied up and made ready again for the hazards of the next night There was nothing more for us to do at the moment, and two of the ward sisters who were making a brew of tea called us in to share it They had both got up and had been busy settling their own patients to sleep in the little corridors leading to the wards, and now all was quiet We sat over sister's fire and chatted The blitz had already fallen into its place and proportion in the life of our hospital, for our recollections of the night were not only of torn and crushed bodies, of shattered wards and narrow escapes, but also of old Daddy P, who somewhere about 3 A M was found putting his thin legs out of bed "Here, Dad, where do you think you're going?" one of our party had said to him The thin legs were slowly withdrawn again under the bedclothes "I'm sorry," was the sleepy reply "I thought it was time to get up"

* * *

Your peripatetic correspondent in the R A F V R does not give the whole story Perhaps you would like to hear the other side of it My main reason for joining was that I liked aeroplanes and I wanted to fly My biggest regret in life was that I could not get parental permission to join the University Air Squadron at Cambridge Other reasons for joining were that my fiancée liked the uniform, and that I wanted to do som thing for the people whom I most admired I spe the summer at a big recruits' centre doing F F I s a inoculations and a lot of dull but essential work, a admiring the physique and spirit of the bronzed you men drilling on the promenade My only experience aviation was a pleasant two days on a high altitu course at an experimental research station There is large pressure chamber there, which holds six peop The pressure can be varied to correspond with any heig up to about 45,000 feet In it the effects of oxyg lack and "the bends" can be studied at first han

In the autumn I was posted to an operational stati somewhere in the south of England Here at last came into contact with pilots and aeroplanes a trained men It was grand to hear the booming be of a squadron of Spitfires circling the drome befo climbing away to shoot down the enemy (on one d as many as fourteen for the loss of none) Grand learn all about the planes and their achievements, climb into them, and eventually to fly in them work consists of taking sick parade of about twenty thirty men (rising to fifty or sixty in the influenza seaso who have to be sorted out, and either given sto misturæ or sent to see specialists at the nearest b hospital I wish I had the service mentality and t strength of mind to order ol ric or duty (in red ink) as oft as my senior medical officer would This said S M who takes sick parade once in six months, and sits his office writing vitriolic letters all day, becomes som thing of a public warning One has to steer the midd course between being a complete "stooge," as the R A call it, on the one hand, or becoming like him a slave the rules, refusing to see anyone except at the prop time and on the proper form, and passing one's work to other departments At the end of sick parade o sees the W A A F s, who at least give one the illusio that one is keeping in touch with female ailment After this there is an interval for a cup of tea and chat with the other M O s, the dental officer, and an officers who may have dropped in for advice Durin the morning there are "special sick"—men who hav fallen ill since getting up, or who have been injure There are "sick in billets" occasionally, and th patients in the ward to be seen Now and then the are air-raid alarms during which one has to retire to bomb-proof shelter and dressing station, and sit unde much concrete and several hot-water pipes awaitin casualties After a decent lunch interval one come back and inoculates a score of men, or examines som airmen who wish to become pilots or air gunners, who have to go overseas Occasionally one meets som interesting condition, such as Adie's syndrome and is always fascinating to detect colour-blindness b means of Ishihara's plates After tea one is more less free, unless one is orderly medical officer, when on has to stay on the camp in case of accidents Sometimes sick quarters echoes with the shout "crash on th drome!" The ambulance springs to life One leap in and is driven away furiously, usually to find a plan that has tipped up on its nose or landed with its undercarriage up, and a pilot swearing that he is unshake and does not want to be examined Occasionally on is called out at night and told to proceed to the scen of a crash, say five miles north-west of the drome Th is the most unpleasant part of one's job, searchin masses of wreckage for bodies, possibly those of peopl one has known well Fortunately it does not happe often Once weekly one does a sanitary round of th camp and makes a report In my medical education suppose I am wasting my time I prescribe stock mixtures and applications for minor complaints, bu anything serious is sent to a hospital and whirled int the maw of transference which seems to be the joy o the E M S, and contact is impossible to maintain Where now, I wonder, is that tuberculous epididymitis, that possible actinomycosis, that magnificent gumma, and that leukæmia that got better so mysteriously? I shall never know It is six months since I saw an X-ray plate, and I have forgotten what a microscope looks like Higher examinations are out of the question, but do I care? The aim of everyone in the R A F should be to keep the planes and pilots in the air, and for that end it is my privilege to work we are only able to collect 50% or 60% of the refuse f this country" This is no academic problem for the ss of kitchen waste represents potential pigs and oultry. One ton of the salvage product in Tottenham, it estimated, would feed one pig for one year and if the hole of the urban authorities collected it with equal iligence the salvage would suffice to maintain half million pigs or one-seventh of the prewar population f pigs Putting it another way we can say that such alvage is equivalent to one-sixth of the prewar importation of animal feeding stuffs Now owing to the difficulty f importing such feeding stuffs animals are being laughtered and there is already a shortage of first-class rotein

Of course it may be argued that there should be no itchen waste and the thing to do is to educate the 'openhanded British public," as Ruskin called them to ut out their kitchen waste Dr G E Friend in "The School Boy" points out that the table wastage at Christ's Hospital became vanishingly small during the ationing years 1917–19 and that by training in that school it is as low as 1% even in more prosperous times And be it remembered that puberty is a wasteful age We have, however to take things as they are, and while t may be admitted that the public as a whole. including he Services, need education in preventing wastage of food, it is none the less wrong not to put what wastage there is to the production of home grown food material.

In the same debate Lord Bledisloe expressed a fear that still further wastage of food material would result from the avowed policy of the Ministry of Food of diverting a portion of the fluid milk to the manufacture of cheese From a dietetic point of view it would be much better if the whole of the fluid milk of the country were used as fluid milk. Unfortunately the convenience of cheese and its keeping properties must weigh against its smaller food value than that of the milk from which it is manufactured. It is difficult to convey milk down a coal mine or into the fields, nor would it be easily possible to persuade miners and agricultural labourers that milk is as satisfying as cheese None the less the loss is a considerable one Most of the lactalbumin and lactose of the milk together with some protein split from the caseinogen is apt to be lost in cheese manufacture. In the past it has been largely lost by turning the whey into the sewers The effluent from cheese factories has in fact proved as detrimental to the livestock in our rivers as crude sewage, for it is an admirable pabulum for micro-organisms which rob the water of its oxygen. All this waste protein. approximately 1% of the whey, and the lactose (4%) can and should be recovered There are manufacturing plants in this country which have produced dried whey for human consumption and if in peaceful times these products made little headway it is essential that we should use them now especially in view of the lack of first-class protein in our war-time dietary All skilled manufactories find a use often a very profitable use, for their by-products

The Budget

The Chancellor of the Exchequer will open his budget on the first sitting day of the House of Commons after April 6

QUESTION TIME

Coroners and Air-raid Casualties

Major J Milner asked the Home Secretary whether he was aware that coroners' inquests were not now being held in the case of casualties apparently due to air raids, that administration of the new procedure was in the hands of mortuary attendants usually without any special qualifications or experience, and whether, having regard to the difficulties arising in regard to identification and other matters and to the possibility of deaths by violence other than by air raids being undiscovered, he would consider reversion to the system of coroners' courts with any necessary modifications —Mr Herbert Morrison replied In view of the impossibility of arranging for a coroner's inquest in every death due to war operations, a defence regulation was made at the outbreak of war which placed on the clerk of the local authority the responsibility for certifying to the registrar that death was due to war operations There is a responsibility on the local authority to see that the superintendents of mortuaries are competent persons, and unless it is clear that the death was due to war operations the case must be referred to the coroner for investigation. The question of making special provision in cases where there are difficulties of identification has recently been under the consideration of the Government, and by a new regulation which came into force on March 14 provision has been made for special inquiries by the coroner in such cases

Distribution of Medical Man-power

Mr T E. Groves asked the Minister of Health what procedure was adopted by the Central Medical War Committee and the local medical war committees in order adequately to decide the relative claims for doctors of the armed forces and civilian practice —Mr E Brown replied · The procedure adopted by these committees in selecting doctors for recruitment to the Forces provides for a full investigation in each case of the needs of civilian practice The local committee invites representations both from the doctor himself and from interested parties, such as his partners, or, if he is an assistant, his principal, a hospital or any public authority by whom he is employed, and, if he is an insurance practitioner, the insurance committee These recommendations are fully considered and if so desired are made orally If the local committee recommends recruitment, objecting parties may make representations to the central committee in the same way

Alien Doctors

Sir Henry Morris-Jones asked the Minister whether as the present arrangements for allowing alien allied doctors in this country to help in the joint cause by becoming temporarily registered medical practitioners were slow and unsatisfactory, the committee which made these recommendations would now accept, and recommend, the names sent to them by the allied government concerned in London.—Mr Brown replied The Central Medical War Committee, which acts as a clearing house for supplying alien doctors to hospitals and other authorities desiring to employ them, has received a large number of names from various sources and will, of course, be glad to receive others from the Allied Governments concerned. The procedure necessarily took some time to set in motion, including as it does the steps necessary for registration with the General Medical Council and for satisfying the general requirements relating to aliens. I am informed that it is now working smoothly

Impure Milk at Newcastle

Mr David Adams asked the Minister whether he was aware that samples of undesignated milk collected and submitted to bacteriological examination by the Newcastle upon-Tyne corporation during last month, showed satisfactory 15, unsatisfactory 14, total 29 ; and what steps were being taken to improve the quality of this class of milk supplied for food into the Newcastle area.—Mr. Brown replied I have received recent reports on samples from the corporation though I cannot identify the particular figures referred to Local investigations have been made and I understand that as a result more effective supervision is likely to be secured.

After-care of Tuberculous Patients

In answer to a question Mr Brown said According to the latest information in my possession, 121 tuberculosis authorities out of 174 in England and Wales have made aftercare arrangements. The number of new cases attending dispensaries is well maintained in urban areas, having regard to the effects of evacuation from those areas

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Actinotherapeutic apparatus embodying some interesting new features is described by Hanovia in their catalogue The model VI (type 220) Alpine Sun lamp has a self-starting arc-tube with greater ultraviolet emission than the older standard model Constant intensity of output is maintained by rheostatic control. With this type of high-pressure mercury-arc burner a smaller tube is used, the cost of apparatus and running expenses are reduced and replacements are simplified The telescopic pillar and well-designed control unit give greater ease in the adjustment of the apparatus A new Kromayer lamp, model V, embodies improvements on earlier models. The burner starts automatically and can be operated in any position An intensity-stabiliser ensures constant output, and greater intensity of ultraviolet emission is secured by operation at higher pressure time of handing over to the receiving householders The result of inspection showed 95 to be verminous, 12 infected with scabies, 94 with septic spots, 48 with dirty bodies, 153 with dirty clothing and 310 with insufficient clothing This is an exceptionally bad consignment, but it tells us what every medical officer knows full well (and many have been far from inarticulate on the subject) that we are only at the beginning of the social reforms initiated by the medical inspection of school-children in 1907

BURY

Dr George Lobban tells us that the average annual rates, in the last five quinquennia, of deaths from pulmonary tuberculosis per 1000 population were 1 18, 0 81, 0 73, 0 59, 0 44 The rate for 1939 (0 36) was the lowest recorded The population has fallen during the past six years, from 60,100 in 1934 to 58,600 in 1939 During this period the net births were 4533 and the net deaths 5192, giving a natural decrease of 659 out of the recorded decrease of 1470 The number of cases of phthisis notified in 1939 was 31, the lowest in 25 years and little more than a quarter of the number in 1915 (120) Other tuberculosis, on the other hand, has not fallen conspicuously, for the annual average numbers notified in the five quinquennia were 26, 29, 35, 22, 23 The fall in mortality, however, was 0 31, 0 19, 0 18, 0 18, 0 13 The epidemiology of phthisis is still obscure, differing from that of other forms of tuberculosis and also from that of other respiratory infections The low phthisis rates and their rapid reduction in Lancashire are two of its most puzzling features

MACCLESFIELD

In this borough, with an estimated population of 36,350, there were 384 births in 1939 The infantile mortality was 57 2 and the stillbirth-rate 57 3, but the maternal mortality was nil Dr J H D Lawrie, medical officer of health, gives the birth-rate as 10 5, the lowest ever recorded In the four years 1936–39, the stillbirth-rates were very high 56 5, 55, 70 7, 57 3. The neonatal death-rates were also high 40 7, 43 0, 31 7, 36 4 The combined rates, which give the mortality of fœtuses carried to viability (97 2, 93, 102 4, 93 7), show a loss of potential lives of 10% which can ill be spared in a town with a low and declining birth-rate

Two analyses of swimming-bath water, one from a bath used by men, the other from a women's bath, agree in absence of *B coli* in 100 c cm but differ considerably in total counts of aerobes In the sample from the men's bath the counts were 3700 per c cm at 22° C and 4400 at 37° C, in that from the female bath, 4 at 22° C. and 3 at 37° C As *B coli* is the most resistant organism of its class, its absence ensures the absence of all intestinal bacteria capable of causing disease by ingestion The rise in the popularity of swimming raised doubt whether the benefits of the exercise might not be offset by the spread of intestinal infections through swallowing bath-water, it is satisfactory to know that this risk can be abolished We say " can be," and might add " must be," but cannot yet say that it always is

Infectious Disease in England and Wales

WEEK ENDED MARCH 22

Notifications —The following cases of infectious disease were notified during the week smallpox, 0, scarlet fever, 1205, whooping-cough, 4319, diphtheria, 1064, enteric fever, 24, measles (excluding rubella), 14,888, pneumonia (primary or influenzal), 1177, puerperal pyrexia, 123, cerebrospinal fever, 330, poliomyelitis, 8, polio-encephalitis, 0, encephalitis lethargica, 2, dysentery, 128, ophthalmia neonatorum, 83 No case of cholera, plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospitals of the London County Council on March 21 was 1797, including scarlet fever 238, diphtheria, 337 measles, 428, whooping cough, 259 enteritis 26, chicken pox, 109, erysipelas, 38 mumps 1 poliomyelitis, 1 dysentery, 39, cerebrospinal fever 80, puerperal sepsis, 7, enteric fevers 2 german measles 12 glandular fever, 2, other diseases (non infectious) 88 not yet diagnosed, 110

Deaths —In 126 great towns there was no death from smallpox or enteric fever, 2 (0) from scarlet fever, 36 (2) from whooping-cough, 21 (0) from measles, 44 (4) from diphtheria, 38 (2) from diarrhœa and enteritis under 2 years, and 116 (9) from influenza The figures in parentheses are those for London itself

Liverpool reported 5 deaths from whooping cough and in the same week at Glasgow there were 14, Liverpool had 6 fatal cases of diphtheria, and Wolverhampton 4 There were 8 deaths from influenza at Bradford and 7 at Birmingham

The number of stillbirths notified during the week was 228 (corresponding to a rate of 41 per thousand total births), including 16 in London

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Parliament

PARLIAMENT has spent a humdrum but useful week The royal assent was given to the War Damage Act which should do much to help those who have suffered through air-raids It is not often that the House of Commons goes into the division lobbies in these days of the party truce, but members did so last week on the New National Service Bill, which seeks to introduce compulsory recruitment for the civil defence services and to amend certain amendments of the National Service (Armed Forces) Act where experience has shown it to be necessary. Mr ERNEST BEVIN in moving the second reading explained that compulsion was necessary because of the shortage in certain districts of whole-time workers for civil defence But the original conception of the citizen force remains unimpaired, and has been fortified by the response of volunteers all over the country Men liable for service in the armed forces and men registered as conscientious objectors on condition that they take up civilian work under civilian control will become liable for civil defence service Women are not included in the bill It was proposed to draw mainly from men over 30 or possibly 35 years of age, and there was also a suggestion to review the cases of men who had been placed in medical grade 3 but who might be quite capable of giving civil defence service Mr C G AMMON and Mr E HARVEY paid tribute to the steps the Government had taken to protect the citizen's rights of conscience even when it believed that conscience to be mistakenly informed, but Mr MCGOVERN denounced the bill in a speech which Mr L SILKIN described as " interesting, abusive, irrelevant and muddle headed," and when the division took place 176 voted for the second reading and only 4 against Mr Maxton and Mr McGovern acted as opposition tellers

Evacuation Debts

When the Liabilities (War-Time Adjustment) Bill was read a second time in the House of Lords the Lord Chancellor explained that the shifting of the population had placed many honest people in a position of extreme financial difficulty Innocent people, such as doctors whose patients had moved elsewhere, were subject to an immediate financial strain The remedy as prescribed in the bill is to set up simple machinery to bring together the debtor and his creditors Lord SIMON said that the long-sighted creditor—to say nothing of the merciful creditor—would see the advantage of making a bargain from which he does not get twenty shillings in the pound One of the difficulties of leaving such cases to voluntary action was that a creditor who is willing to compromise may be chary of making an agreement while other creditors are free to exact the full payment The bill provides for the appointment in each district where it is deemed necessary of a liabilities-adjustment officer whose services should make it unnecessary for most cases to go to the court

Kitchen Waste

In the House of Lords on March 19 Lord DAVIES called attention to the deplorable fact that even now, after eighteen months of war, only some 40% of the kitchen waste of the urban population is salvaged and turned into feeding material for pigs Taking as a basis the results obtained by the Tottenham local authority he showed that a group of urban authorities, including Sheffield, Huddersfield, Croydon and Wembley, collected during the month of January a bare 42% of what they might have salvaged Nor did the Government spokesman deny the urgency of the problem or criticise the figures brought forward by Lord DAVIES except by putting the total possible salvage a little lower He admitted that " it must be a very bad thing at this time

THE NEUROLOGICAL APPROACH TO MENTAL DISORDER

SIR,—At first sight I doubted the necessity for discussing Group Captain Symonds's article. The fanciful picture there drawn of the medical psychologist—a designation which is not a product of this century—coupled with the devastating description of the training of the "sound psychotherapist," calls however for comment. The postgraduate teaching at the Tavistock Clinic, for which I can speak, has, however imperfectly, been evolved in order to obviate the very situation, amateur and dangerous, which Group Captain Symonds is advocating. His ominous sounding but undocumented criticisms of the results of psychological treatment mean just as much as the statements which we could all make about patients misdiagnosed and mishandled by neurologists.

Something more constructive is happening in the United States. The *American Journal of Psychiatry* of January 1941 (pp. 780–804), reports a discussion at the American Psychiatric Association, attended by the heads of the research foundations, Dr. Adolf Meyer and many others on present-day trends in neuropsychiatric research. One may perhaps usefully abstract three points from the chairman's summary of that discussion :—

5. Neuropsychiatrists need to be not only psychologically trained, but should be better oriented in the basic sciences.

6. Conversely, internists and pediatricians need a psychologic orientation.

7. In the field of psychotherapy there is need for postgraduate schools to teach and test the various psychotherapeutic methods. Such schools should be established under university ægis.

In the discussion a curriculum of three or four years was suggested for training in psychotherapy. Most psychiatrists in this country will be inclined to agree with the American opinion.

Wimpole Street, W.1. J. R. REES.

SIR,—Since Group Captain Symonds has elected to use the occasion of a presidential address, when debate is barred, for his assault on the psychological approach to mental disorders, he compels some of us to take up your valuable space. He also betrays thereby the weakness of his position, one of increasing isolation from modern medical opinion, even in his own specialty.

The spectacle of the organic neurologist, with his interest focused on the purely material substratum of nervous—not even mental—phenomena, still claiming the sole prerogative to conduct psychotherapy by the magical virtue of his "sound training" in reflex levels is almost pitiful in this year of grace. He is himself compelled to admit that human understanding and values are the keys to this branch of healing, but in the next breath denies them the right to a special discipline and method of their own. We all know how sterile the organic approach, with "bromide and a sea voyage" as the chief therapeutic standby, has been. And we can also imagine the uproar in the neurological camp if a psychotherapist had the temerity to stand up and proclaim that a knowledge "of a few fundamental principles" of anatomy of the C.N.S. and the ownership of a reflex hammer made him a competent neurologist.

As to theory, Dr. Symonds is in the position of a man trying to convince us that the quality of music will be understood by patient investigation of the physics of horse-hair scraping on cat's intestine. With this conclusion Sir Charles Sherrington, according to his latest book, appears to be in complete agreement.

London, S.W.1. H. V. DICKS.

SIR,—Several of your readers have expressed the hope that I will take formal exception to what they regard as a psychologically "reactionary" article. Although I sympathise with their indignation, I do not feel called upon to enter the jousts on their behalf. After all, Group Captain Symonds is entirely within his rights in endeavouring to describe what he calls a neurological approach to mental disorder, even if by his use of the term "mental" he cuts the ground from under his own feet. In any case it is common knowledge that whereas the stress of war usually contributes to the advancement of science it likewise calls from their sleepy Victorian hollows many a Rip Van Winkle. Nor does Dr. Symonds's brief but inglorious incursion into medical psychology call for any particular comment. This is evidently a subject concerning which he knows little and cares less. On the other hand his open incitement to the practice of psychotherapy by unqualified persons is a more serious matter. Here, to say the least of it, is an indiscretion which should not have exceeded the limits of privately expressed prejudice. Just in case any of your readers should regard his statement as authoritative I should like to draw attention to the fact that it is the fixed policy of all recognised psychological institutes to insist on increasingly stringent standards of qualification. In the case of the Institute of Psycho-analysis for example, this involves a minimum of four years' training, particulars of which can be had on application to the secretary's office.

EDWARD GLOVER,
Director, London Clinic of
Psycho-analysis.

Gloucester Place, W.1.

SIR,—In his presidential address Group Captain Symonds gave persuasive expression to a number of very controversial opinions. His views have already been challenged by several of your correspondents. Their criticisms seem to me to be, for the most part, sufficiently pertinent to allow one to hope that Dr. Symonds will think fit to reply, despite the tradition that a presidential address is immune from discussion. In this hope I venture to submit a few further questions.

Dr. Symonds says "sleep is controlled by a compact and localised mechanism in the hypothalamus. When this is disturbed sleep is disordered." Would he proceed to state that when sleep is disturbed the localised mechanism is necessarily disordered? If so how does the localisation of the mechanism affect the treatment?

Again let me submit the following typical case. A woman washes her hands twenty times a day. She consults a present-day neurologist. After careful examination he pronounces her as being "organically sound" and recommends her to seek treatment at the hands of a medical psychologist, adding—paradoxically enough—that her trouble is all due to her "nerves." The assumption is therefore justified that this particular affection of the "nerves" is beyond the frontiers of present-day neurology. I am concerned to know from Dr. Symonds:

1. Whether the neuropsychiatrist of the future will still tell the patient that it is all due to her "nerves."

2. Whether he will treat the case himself (seeing that there will be no more medical *psychologists*).

3. Whether, in that case, he will attempt to "lay bare the patient's spirit."

4. And, if so, will his chances of therapeutic success rest exclusively on his personal, apart from his professional, qualifications?

Dr. Symonds has laid us all under a debt for his brilliant and learned address. I, for one, would be further indebted to him for answers to these questions.

London, W.1. H. CRICHTON-MILLER.

SIR,—The concept of the unconscious has been accepted by most lay and medical psychologists as a valuable and even necessary hypothesis. Despite many connotations, it has played a central part in the development of modern *psychology* and psychopathology. Surely no psychiatrist nowadays questions the fact of unconscious mental life. Group Captain Symonds says that the "gap between psychology and physiology is still so wide that it is beyond imagination to pass it"; and asserts that "unconscious activity for the neurologist *means* physiological activity and no more." The neurological approach to mental disorder would seem to have *nothing* to offer the psychiatrist. What can the neurologist say of hallucinations, phantasy, dreams, memory? Are they related to "the anatomical substrata of consciousness" or are they an indication of "unconscious cerebral *function*?" And, if so, are we much further on?

We are told in this paper that some medical psychologists—the modest ones—claim that it is because of their technique that they are *successful*. If this claim could be supported, then any intelligent person, having

Letters to the Editor

FEEDING OF THE YOUNG

SIR,—That the feeding of the young is difficult under rationing no-one will deny A little calculation will show that to give them adequate amounts of first-class protein is almost impossible for the great majority of the nation Let us assume that the League of Nations figure of 60 g of total protein per day for the child of 9-10 years is reasonable Of this a definite proportion should be first-class protein Even those who deny the necessity for first-class protein in the diet of the adult admit that growing animals do better on first-class protein than on vegetable and cereal proteins I have seen young laboratory rats on casein show double the rate of growth the controls showed on the same amount and proportion of wheat gluten There are no adequate data concerning how much of the 60 g should be first-class protein I am assuming half—i e , 30 g If a child gets his full ration of meat, his aliquot share of the milk produced in the country, his ration of bacon and cheese, and in addition one egg and about 1 lb of fish per week his total first-class protein will, it is true, be over 30 g a day Thus

	(g)
2 oz *meat (taken as raw beef steak)*	11
$\frac{2}{3}$ pint milk	12
$\frac{4}{7}$ oz bacon	2 3
$\frac{1}{7}$ oz cheese	1 1
$\frac{1}{7}$ egg	1
$2\frac{2}{7}$ oz herrings	6 6
	34 0

In this calculation the figures have been weighted in favour of obtaining the requisite amount For example, if mutton chop, as purchased, is substituted for beef steak the value of the meat sinks to 4 g (with scrag end it would sink still lower wiping out the surplus and bring it to a deficit If more than $\frac{2}{3}$ pint of milk is taken someone else has to have less , there is not enough milk produced to give more We thus see that a middle-class child of 9–10 years, unless his parents go to the extravagance of more eggs, white fish, game and poultry, will only just cover the assumed need What the deficit for his older brothers and sisters will be can be imagined and we cannot offset his younger relatives against them, for their needs are proportionately greater Now if middle-class children are likely to suffer deficit, how much more will the children of the poorer classes suffer The position is more than disturbing I may, it is true, have overestimated the need for first-class protein, or imagined the middle-class folk too thrifty with eggs and fish, but that still makes one doubt whether the working classes will get enough first-class protein for their children and fear that after the war we shall meet with a lowered stature and physique of the rising generation which will take, as it did after the war of 1914–18, many years to wipe out

The remedies are free milk in the elementary schools, cheap milk for the young up to 18 years of age, and a voluntary sacrifice by the adults of their ration of first-class protein in favour of the young

V H MOTTRAM

King's College of Household and Social Science

A HUNDRED CASES OF BREECH PRESENTATION

SIR,—Professor Claye asks what useful purpose is served by our article on breech presentation in your issue of March 1 One obvious answer is that it was written with provocative intent to stimulate discussion of a problem on which, despite its antiquity, the last word has not been spoken In this, at least, we have succeeded Like Mr Walker we want to know, and no less than Professor Claye we deplore the sketchiness of the case-notes , but we cannot be held responsible for the sins of omission of a long series of harassed and probably overworked hospital residents No doubt they order these things better in Leeds We described case 3 as " alleged contracted pelvis " for the excellent reason that these were the actual words used in the hospital notes This paper was not based on a planned investigation, in which accurate notes would have been kept from the outset , it was written with the idea that the recording of some honest facts, representing perhaps a fair average of obstetric practice in this country, would be both salutary and instructive Many of these patients come from widely scattered country districts and the notes date back for several years It was not feasible to trace and interview all these women, nor did we feel that the omission of the unknown factors mentioned by Professor Claye altered the issue, since there was no reason to suppose that they differed materially in the two series

The treatment of 26 out of 64 cases by cæsarean section can scarcely be described as " wholesale resort to laparotomy," and the reason that the hydrocephalic was so delivered was that, regrettably enough, it was not diagnosed as such We did not state whether the classical or lower uterine segment operation was employed in any particular case because we did not consider the type of operation relevant to the issue In point of fact the classical operation was performed in every case In discussing the subject we do not pose as authorities nor do we hold any final brief for a particular method of treatment , but we are concerned with facts and not with impressions Professor Claye tells us that version at the 34th week is usually easy , it would be interesting to know, if he can tell us, what *proportion* of breeches diagnosed at the 34th week turn spontaneously if left alone He tells us that, as a result of version under anæsthesia, a certain (unspecified) number of placental separations will occur, that breech delivery per vaginam " remains the best treatment for most cases " and that cæsarean section " though technically easier kills more mothers " Without substantiation these statements are mere expressions of opinion Could not Professor Claye furnish us with the facts and figures from his own experience on which he bases these assertions ?

Dr Violet Russell has formed the impression that most practising midwives would get a fœtal mortality in breech cases much lower than 25% Until we came to examine the figures we thought our mortality was less We would emphasise, however, that our fœtal mortality figures are quite " uncorrected," and include not only stillbirths but also deaths within a few hours of delivery, whereas in many papers on the subject the fœtal mortality has been " corrected " according to the whim of the author concerned Moreover we cannot accept with complacency the " unavoidable " fœtal mortality to which Dr Russell refers

Mr James Riddell, though he gives us no figures, contributes much wise advice on how to determine the best method of treatment in any given case He does not share Dr Russell's misgivings about abdominal scars, which he thinks are to be preferred to the damage to the genital canal which may follow a difficult vaginal delivery

In his valuable letter Mr J W Burns has misinterpreted our sentence " maternal mortality in this series was nil, infant mortality 10 " This refers to the whole group of 53 hospital cases remaining after deducting the 11 cases treated successfully by version The figure 10 which should, in fact, read 9 (the error was ours) is the actual number of fœtal deaths in this group and not a percentage mortality figure In quoting our statement " if version fails then cæsarean section is the treatment *of choice*," he omits our provisos which bring our tentative opinion very nearly into line with his own views His observation on the hazards and difficulties of external version are in interesting contrast with those of Professor Claye With regard to his helpful figures on fœtal mortality in breech presentation, we should like to know if they have been in any way " corrected " , in any case it may be noted that, although Mr Burns's fœtal-mortality figure for vaginal delivery is decidedly better than ours, it is still more than double that for his own series of cases delivered by cæsarean section

In conclusion, we can assure Professor Claye that we all take a real pleasure in our obstetrics , we only wish that our experience of breech delivery gave us greater cause for pride

ALAN GAIRDNER,
MARGARET HADLEY JACKSON,
L N JACKSON

Crediton

Chiseldon At the outbreak of this war he rejoined and was appointed an A.D M S

Fruity Middleton, as he was known to his friends, was an attractive and genial personality, yet when he felt a course was right he had the courage of his convictions He was well versed in the administrative problems of the army and the welfare of the soldier was safe in his hands

ARTHUR DOUGLAS WEBSTER

O B E, M D MCGILL, D SC EDIN, F R C P E

Dr Arthur Webster who died in Edinburgh on March 15 at the age of 85, was born in Nova Scotia and educated at Montreal He graduated at McGill University in 1878 and shortly afterwards went to Edinburgh where he took the Scottish conjoint qualification In 1884 he was elected a fellow of the Royal College of Physicians of Edinburgh, and four years later he obtained his B Sc in public health at Edinburgh University He practised as a physician in the city for nearly 60 years Before the last war he was medical officer of the 4th battalion Royal Scots (Queen's Edinburgh), and in 1914 he became medical officer to the 1st Edinburgh battalion (Kitchener's Army) 15th Royal Scots, and afterwards to the 16th, 17th, and 18th battalions during their mobilisation He described his experiences in "Kitchener's Army" and was awarded the O B E for his services Dr Webster's wife died eight years ago, and he is survived by two daughters and two sons, the elder of whom is Dr J Douglas Webster, director of the institute of radiotherapy at the Middlesex Hospital

Appointments

EADNELL LOUIE L M M.R C S asst M O H for Barking

ONTIN, J D, M B Lond resident asst registrar at the Royal Free Hospital London

ARVERSON, E S, M B Lond R S O at St John's Hospital, Lewisham

OROWITZ W E, M D Vienna house-officer at St Mary's Hospital for Women and Children, Plaistow

EWIS MAURICE, M.R C S asst M O H for Barking

IPMANN KESSEL, A W, M R C S R M O at the Royal Cancer Hospital (Free) London

AZ, L P, M R.C S resident surgeon at Grove Road Hospital Richmond

CALLAGHAN DESMOND, M B Lond R S O at Grimsby and District Hospital

IOB, C G, M Chir Camb, F R.C S resident asst surgeon at St Thomas's Hospital Godalming

COTT, T H M B Edin, late Colonel A M S physician superintendent at the Princess Louise Scottish Hospital Renfrewshire

HARPE DOROTHY A, M B Lond F R C S, M R C O G obstetric surgeon to the Royal Free Hospital London

HOMPSON, SOPHIA M R, M B Edin temp asst M O (civil defence) for Stratford

ENGER R A L M A Camb, F R C S E general S O at Woodend and Old Mill Hospitals, Aberdeen

Births, Marriages and Deaths

BIRTHS

ARTER.—On March 23 at Londonderry the wife of Surgeon-Lieutenant B M F Carter, R N V R—a son

HUGHES—On March 25, at Woking the wife of Dr Stephen Hughes—a son

RAPER.—On March 22, at Salisbury, the wife of Major Alan Raper, R.A M C—a son

TEARE—On March 29, at Windsor, the wife of Dr Donald Teare—a daughter

WIENER—On March 29 at High Wycombe the wife of Mr R A Kilgour Wiener F R C S—a daughter

MARRIAGES

BALLANCE—ANSTIE—On March 29 at Speen, Gerard Alaric Ballance M B to Bridget Mary Anstie

CASSON—COOK—On March 26 at Kampala Arthur H Casson M R C S, to Clarice F Cook

NEUSTATTER—CLUTTON BROCK—On March 29 at Tandridge Walter Lindesay Neustatter M R C.P, to Mary Alice Clutton-Brock

PAULLEY—GAVIN JONES—On March 2, at Oxford Probationary Officer J W Paulley M B R A F to Deirdre Gavin-Jones

WIGGINS DAVIES—GILBERT—On March 29, at Chelsea Walter Ll Wiggins Wiggins Davies, F R C S, to Ann Destine Gilbert

DEATHS

GROSVENOR.—On March 25, at Stevenage Herts Alfred Augustus Grosvenor M D Dubl

MACDONALD—On March 29 at Bridge-of Allan Stirlingshire, John Smyth Macdonald B.A Camb L R.C P E F R.S aged 73

MCDOUALL.—On March 25 at Honiton, Devon John Crichton Stuart McDouall O B E M R.C S, D T.M & H, sometime director of medical sanitary services, Sierra Leone

Medical News

University of Sheffield

At recent examinations the following were successful —

M D—M B Brody

FINAL EXAMINATION M B, CH B

Parts II and III—E H Jones and Martin Laird (with second-class honours), C H Foggitt, P S D Gowers, J D Hopewell J R Horn, N R Marshman, Joan Pattison Fritz Rudnicki, C H B Sparrow and Per Turner

University of Liverpool

At recent examinations the following were successful —

FINAL EXAMINATION FOR M B AND CH B

Part I—D Annis, A Ansell E R Banner Beryl R Bentley, Margaret J Blackburn, K W Boggis H O M Bryant, E Burman, E F B Cadman, Eva V Cooper K H Dalrymple, A S Davidson G Davies, J N Dearnaley, J F Doherty, K E Donnellan, Ann Donnelly, I H Foy, H Francis, H G Frank, H Friend, S M Green, F D Griffiths, Elizabeth M Harper, A Jolleys, Eirwen M Jones, S E Keidan, H Lewis I P Madhok, Margaret L Magee, A W Merrick, A F Murphy, R C Nairn, K H Oldfield C Pownall N E Raybould, R L B Roberts A J Robertson P L Robinson, M J R Ryan Betty Schofield E Scott E R. Shepherd, K H Slatter, Hugh O Williams and Margaret Woolfenden

Part II—E H Annels, A S Beadel, J J Bligh, S Bradshaw, Hilda E Bullen E R Carter, W P Clothier V L Cooper H V Cross J G K Dean P J Devlin, Jean M Frazer K C Fulton, Patricia F M B Gould, Joan O Grant T C Highton, M Horwich, R. D Hotston H P Hughes, F A H Inman, W B E Jones J J Lieben J Littler, M L P Lyons Jane C S Maclachlan, L Mandel, A J Marsden R H Martin R H Maudsley Betty W Morris P D Moss J C V Murphy S P C O'Reagain C Pownall G J Rees, Hilda M Reeve, G C Roberts C D Rosenwald D I Rowlands, J M G Sarson T L Schofield Irene W Simpson, R V Tracy Forster Amabel M Turner, D C Watson R H Watts, G A Wetherell, D W Wilson, H S L Young and Rosalind Zahn

D T M—P Austin, P R Cooper, U K Menon, L Merrill, G Prasad and W B Young

University of Dublin

At recent examinations at the School of Physic, Trinity College, the following were successful —

M D—G J Dixon R T Jackson and P A McNally

FINAL EXAMINATION FOR M B, B CH AND B A O

Medicine—B W Wyllie, E D Kerr Alicia G Pike (second class honours), M E Weiner, W G Caldwell, A F Crowley, H H Robinson J R Healy, H B Houston, W J Thompson and Isadore Shribman

Surgery—M A Majekodunmi J L Handelman, Kathleen M Patterson, N H Stewart, A H H Guilbride L C Jacobson Simon Smullen A F Crowley and C D MacCarthy

Midwifery—G B Gibson and Elizabeth D L Simpson (first-class honours) S T McCollum G S Prince Maude F P Bigger Emmeline P Crowe Kathleen M J Morphy, P C Smyly, Margaret F Y Dixon J B Dunlop, J R Hassard, M J M Solomons (second-class honours) J P Hearne, J P Walsh Helen S Watson T A H Black C R Griffin Ivy K Bayne, Ethna M MacCarthy L H Shrago Gladys M Byers, L H Citron, A C MacA Hobson G F Shaw Bernard Kernoff A M Russell R O D Reid J N Greene T L Kelly, A G Lee Dorothy H Webster C E Williams A C McReynolds T J N Bates Harvey Lesselbaum, C W Lloyd A R B Jackson and D J Naughton

D P H—*Part I* William Hayes and F W Crook

Epsom College

Scholarships—The council of the college will shortly proceed to award St Anne's scholarships to girls attending Church of England schools Candidates must be fully 9 and under 16 years of age, and must be orphan daughters of medical men who have been in independent practice in England or Wales for not less than 5 years The value of each scholarship is dependent upon the means of the applicant and the locality and fees of the school selected

Pension—The conjoint committee of the college will in May award a Christie pension of £89 a year to a necessitous medical man, fully 55 years of age, who has been registered for five years, and who is in need of help

Forms of application for the scholarships and pensions can be had from the secretary's office, Epsom College, Surrey, and must be completed and returned by April 25

Sir Bernard Docker presided over the annual meeting of the British Hospitals Association on March 28, when Mr R H P Orde, who has retired after 20 years from the post of hon secretary, was elected a vice president In moving the adoption of the annual report Sir Bernard Docker explained the arrangements which had been made to ensure liaison with the Nuffield trustees in the development of the regionalisation scheme He afterwards introduced the newly appointed secretary, Mr J P Wetenhall, house governor of the West End Hospital for Nervous Diseases, to the meeting been told how, could be a successful psychotherapist It is not quite so simple as that Yet the author goes a stage further when he maintains that the sound psychotherapist in addition to having the qualities of a good doctor needs only " the aid of personal experience and a few fundamental principles to guide him " The " few fundamental principles " is the rub Even if we could define them to our own satisfaction they might well prove to be a hindrance in the hands of another Group Captain Symonds holds that the gap between neurology and psychiatry, unlike that separating psychology and physiology, is narrower than it has ever been But neurology, as here depicted, and psychiatry (including medical psychology) seem to have nothing in common Indeed the link between psychiatry and disorders of the circulatory or digestive systems is more obvious than that between psychiatry and neurology

E A Bennet

PRICE OF INSULIN PREPARATIONS

Sir,—You were good enough to publish recently a plea for the use of the stronger solutions of insulin (40 and 80 units per c cm instead of 20 units) on the ground of national economy fewer bottles would be needed, less packing and less labour Now the price of insulin has, I suppose inevitably, been raised to cover increased costs and the argument of personal economy has been added The following figures show that the retail increase is much greater in the weakest solution of insulin and that the increased price can be largely offset by changing to more concentrated insulins

Strength Units per c cm	Cost per 100 units of soluble insulin	
	Old price	New price
20	1s	1s 5d
40	11½d	1s 2d
80	11d	1s 0½d

It is clear that the increase in price can largely be avoided by using the stronger concentrations in appropriate dosage

Harley Street, W 1 R D Lawrence

DIAGNOSIS OF TUBERCULOSIS

Sir,—The letter of Dr Sinclair R Wilson in your issue of March 22 contains some statements which appear to me contrary to generally accepted opinion While all clinicians would agree that it is wrong to apply the label tuberculous without careful assessment of clinical, pathological, and radiological findings, I find it hard to believe that in army recruits the commonest cause of hæmoptysis is bronchiectasis From general experience soldiers invalided out on account of tuberculosis usually have fairly definite and in many cases extensive disease Pulmonary infarction from mitral disease presents clinical features sufficiently definite to make the diagnosis easy Idiopathic pleurisy with clear lymphocytic pleural effusion must still be regarded, in the majority of cases, as of tuberculous origin, though obviously every means such as sputum examination, culture of the fluid and serial radiography should be employed to establish the diagnosis Most clinicians will have seen many cases of frank pulmonary tuberculosis which have given a history of pleurisy with or without effusion, even when complete examination of the fluid failed to reveal tubercle bacilli Those who are meticulous enough to employ gastric lavage for the investigation of suspected cases of tuberculosis are unlikely to do so without good reason, and therefore this is not the only criterion on which the diagnosis is being based

While I am in complete agreement with Dr Wilson that the diagnosis of tuberculosis should not be made on insufficient grounds, it is surely a dangerous practice to relegate tuberculosis to third place in the causation of hæmoptysis in young army recruits

County Sanatorium, Harefield, Mdx John C Roberts

DEDUCT MISFITS AT SOURCE

Sir,—One of the most popular ways of wasting public money at present is for medical boards to pass into the Army men with definite disabilities, physical or mental I do not suggest that the boards are either careless or incompetent Evidently they have neither the time nor the facilities for the full investigations necessary to prevent these mistakes Yet the investigations hav to be made sooner or later Often it is later, after muc money has been spent in equipping the man, attemptin to train him, or find some work that he is fit for, sending him to this and that hospital or specialist (a the cost of untold " ambulance-miles ") Finally va quantities of paper and time are expended by all sorts people, important and otherwise, in getting him di charged Is it worth it ?

Granted that the present boards have a lot of men examine in a limited time, but why not have mo boards ? It will be objected that there are not enoug doctors But there are—hundreds They wear expe sive uniforms and sit at wooden tables trying to cope wit the chronics which have been missed by the board Let us have more civilian boards with plenty of time consider each case They need not be large, or compose of highly experienced practitioners, but they shou have the best possible facilities for obtaining specialist opinions Given clear instructions as to what is expecte of them, even the least experienced doctors are capab of passing the obviously fit men and referring the doub fuls to their more senior colleagues Surely this woul be more economical than the present system, thoug perhaps less impressive as regards the rate of intake in the Army

Brancepeth, co Durham W E Hick

TOXICITY OF SULPHATHIAZOLE

Sir,—It was with considerable interest that I rea your annotation of Jan 11 (p 49) concerning the invest gations of S Moeschlin and H Hurschler (*Schweiz me Wschr* Oct 12, 1940, p 972) These workers report the presence of toxic granules in red blood-cells of subjec getting sulphonamides other than sulphathiazole O the basis of these findings it was thought that sulph thiazole was probably less toxic to red blood-cell although the reason for this remained unexplained

Recent studies by our committee for the study pneumonia at the Philadelphia General Hospital (s Reinhold, J G, Schwartz, L, Flippin, H F an Bethlahmy, S *Proc Soc exp Biol, N Y* 1940, 45, 31 furnish a logical explanation for this finding Thu whereas sulphanilamide and to a lesser extent sulph pyridine penetrate red cells readily, this is not the ca with sulphathiazole We have found that sulph thiazole shows a marked disproportion between concentr tions in cells and plasma when analysed by the metho of Bratton and Marshall In 13 convalescent patien the mean ratio of whole blood free sulphathiazole serum free sulphathiazole was 0 74 ± 0 09 standa deviation Ten patients treated with sulphapyridi showed a ratio of 0 89 ± 0 07 This difference betwe the drugs is highly significant When the concentratio of sulphathiazole in the blood-cells was calculated, t ratio to the concentration in blood plasma w 0 437 ± 0 19 as compared with 0 645 ± 0 18 f sulphapyridine likewise a significant difference

Philadelphia General Hospital Leon Schwartz

Obituary

EDWARD MEREDYTH MIDDLETON

O B E, M B TORONTO, M R C S, COLONEL, R A M C

Colonel Middleton, who was killed on active service March, was the eldest son of the Rev F. E Middleto rector of Haynford, Norfolk He was born in 1880 an educated in Canada After graduating M B Toronto 1905, he returned to England and the following ye took his English qualification from St Thomas's Hospit He obtained a commission in the R A M C at the begi ning of 1907 He was taken prisoner early in the la war and a fellow officer who shared his year's impriso ment has said " the breadth and depth of a man character was searched in such circumstances It enough to say my affection for him was deepened at th end of what seemed to be an interminable incarceration Middleton afterwards served in Macedonia and in Pale tine, and he was twice mentioned in dispatches H retired in 1927 with the rank of colonel and was ap pointed officer in charge of the reception station

ORIGINAL ARTICLES

WOUNDS OF THE KNEE-JOINT*

By W. H Ogilvie M Ch Oxfd, F R C S

COLONEL, A.M.S ; SURGEON TO GUY'S HOSPITAL

The last war saw the re-establishment of the simple outlook on infection and wound healing that had been taught by Hunter and Lister, but obscured by later discoveries The outlook remains unchallenged, but the actual methods of 1918 are not necessarily applicable to the changed conditions, both of war and of surgery, that are met today Then nearly all wounds were caused by fragments of high explosive in exhausted and mud soaked men, now they are inflicted by many different weapons often under almost sterile conditions Then early excision was the only sure safeguard against infection or gangrene, but new therapeutic agents have since appeared—particularly improved sera, the sulphonamide drugs and preserved blood and plasma—that can help the resistance of the tissues so powerfully that less drastic surgery is often possible Then casualty clearing stations had all the refinements and immobility of a civil hospital, today the aeroplane prohibits elaboration in front-line units, and discourages the use of methods that demand a large staff and constant supervision, or whose success would be jeopardised by sudden evacuation Thus the surgery of this war promises to be more complex and yet more simple than that of the last, there will be more therapeutic alternatives more conservative operations and fewer destructive ones, but all methods must be straightforward and foolproof

Where wounds of joints differ from those of non-articular parts of the skeleton they differ for the worse A joint is a cavity of complex shape lined by structures whose resistance to infection is below the average. It cannot be laid widely open for surgical toilet without destroying its mechanism, it cannot be cleansed and washed out easily, and it cannot be drained efficiently If infected it becomes a deep pocket from which toxic absorption takes place readily and from which pus tracks along tissue planes when the capsule is ruptured In the middle of a limb nerves are scattered and there are alternative blood channels; round a joint nerves and vessels are bundled together and often destroyed by the missile that wounds the joint. A bone will function as long as it has continuity, and if the ends are in their correct relationship it will work well however bizarre its shape may be between, but a small amount of damage will render a joint useless Moreover, a bad joint is worse than no joint in other words, pain and instability are worse than ankylosis

The knee is the largest articulation and therefore gives most opportunities for conservative and reconstructive surgery While important structures are grouped round other joints in the knee they are all placed behind, so that uncomplicated articular injuries are more common; on the other hand, its size renders any infection particularly dangerous The synovial membrane lining the knee-joint is very extensive It resists infection poorly, but it has antibacterial powers, and can also form adhesions and limit sepsis to part of the cavity The main compartments are the subcrureal pouch above and in front, and the two condylar pouches behind; the ligamenta alaria seal the first from the second two, the cruciate ligaments and the ligamentum mucosum the two posterior pockets from each other These folds when inflamed can limit the spread of infection, unless movement or tension force their barriers Immobilisation of an injury of the knee, from the earliest moment until infection has been averted or overcome is therefore the key to success

In a forward area, local treatment is limited to cleansing the skin applying an abundant sterile dressing and immobilising the limb for transport The Thomas is the best primary splint, but Cramer's wire or a wooden splint may be applied or the legs may be tied together Any form of immobilisation is better than none The first dose of a prophylactic course of sulphanilamide, three tablets crushed and taken with a drink of hot lemonade, should be given if possible and the amount and time noted on the card

WOUNDS SEEN WITHIN SIX HOURS

At the casualty clearing station or the first operating centre reached every wound of the knee-joint must be regarded as an urgent case for examination and probable operation The most important group will be those seen within the "pre-infective" or "grace" period of six hours Such cases may be roughly divided into (1) those without bone injury, (2) those with injury to the patella only or partial injury of femur or tibia; and (3) those with complete fracture of femur or tibia or complicated by vascular injury In the first group, through and through bullet wounds with punctured entry and exit holes do not usually require operation; wounds with low-velocity projectiles often come in the same category At times of stress these can be evacuated further temporary immobilisation being replaced by something efficient, and the course of sulphanilamide continued If however they can be retained they must be watched carefully, the joint must be aspirated if it gets at all tense, and immobilisation must be continued till infection is clinically overcome The early movement of injured joints is as unsound as the early movement of fractures Movement will be regained more certainly if we aim at preserving the apparatus of movement that is the integrity of the joint than if we practise the desired movements before the joint has settled down. Where evacuation is a pressing need it must be remembered that bullet wounds are always less serious than shell wounds of a similar nature and that an open wound of a joint with escaping synovial fluid is less likely to go wrong if properly immobilised than a valvular wound or a damaged joint distended with fluid or blood

Apart from the group that are left alone for preference and those that are left under stress, the majority of penetrating wounds of the knee-joint of the first class, and all those of the second class with injury to the patella or partial injury to the other bones, should be operated on Before operation every case must be radiographed to detect and localise foreign bodies and to determine the amount of bone damage During the period of investigation and preoperative skin preparation the limb should be moved as little as possible Operation should be done under a tourniquet with the strictest aseptic precautions The wound track, if a simple one, is excised in one piece down to and including the hole in the synovial membrane Where conditions permit, it is well to change instruments at this stage The joint is then opened along anatomical planes sufficiently to allow inspection and cleansing of its interior Foreign bodies are picked out The cavity is irrigated thoroughly with 1/1000 flavine, which will remove the blood clot and will often wash out bits of cloth or fragments of metal Local injuries to bone are treated as radically as possible A patella splintered by a projectile should usually be removed completely Holes in the femoral condyles or the articular surface of the tibia may be scraped with a curette or trimmed with a small gouge till they are smooth cavities lined with apparently healthy bone It was a common practice in the last war to dry such cavities with spirit and rub them lightly with bipp Today the place of bipp would be taken by powdered sulphanilamide, dry or mixed in a paste with Vaseline, and such a practice is thoroughly sound

After excision the difficult question of subsequent treatment must be decided Up to the present our experience and that of the French has been that primary suture even under the most favourable conditions of wound patient surgeon and hospital, is a risky experiment one that has more often been disastrous than successful In the knee, however suture, or at any rate partial suture, should be tried if at all possible, for a

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* Based on a lecture delivered at the British Postgraduate Medical School

Care of Cripples

Speaking at the annual general meeting of the Central Council for the Care of Cripples, Mr Ernest Brown, Minister of Health, said that the Government had accepted responsibility for looking after people injured by enemy action, or in the course of their military or civil defence services But he relied upon the council to see to it that we were not allowed to forget or neglect the ordinary " civilian " cripple Under the Emergency Hospital Scheme 19 orthopædic centres had been established in England and Wales, to which the majority of serious fracture cases, whether military or civilian, were transferred At each of these centres there were skilled and experienced surgical staff—in one centre there was an American team and a physiotherapy department with trained masseuses Facilities for physical training, games and occupational therapy were also being developed, and other hospitals are being brought into the scheme

Mr Brown asked what would be the effect of this scheme on the care of cripples after the war ? Some of these special hospitals would disappear as the buildings in which they were housed returned to their normal uses, but some of them would make a permanent addition to the country's orthopædic services The new hutment hospitals were not a collection of the old army huts, doomed to dilapidation They were soundly constructed pavilions, built often in brick and concrete, and designed to endure for many years, full of light and air

The meeting was presided over by Sir Geoffrey Peto, who said there must be a water tight scheme for the continuous and expert treatment of every war disabled casualty from the day of injury till his restoration to the Forces or to industry This involved seven Government departments and was far from complete, but great progress had been made lately

War-time Standards

On the outbreak of war the British Standards Institution realised that its peace-time procedure was inadequate to deal effectively with the new demands A number of small executive committees were therefore set up for the various sections of its work, who were made fully responsible for the preparation of any war emergency specifications They were given authority to restrict the usual wide consultation of industry to those interests directly concerned, and the reduction of the time usually given for comment on draft standards Any British standards issued under war time procedure will of course be reviewed directly peace comes again Government departments are employing the institution's machinery for the preparation of war emergency specifications The institution is invited to send a representative to appropriate meetings of the materials committee of the Production Executive, which is representative of all Government departments The first issue of the war emergency specifications for tins and cans for food products and other commodities is estimated to have saved 40,000 tons of steel in the first year The institution has also provided the Government, in connexion with the Purchase Tax, with definitions which give the dividing line between babies', children's, and adults' clothing

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Lieutenant J M Muir, M B Edin , R A M C , has been awarded the D S O for gallant and distinguished services in the field at Sidi Barrani

The following awards have been made in recognition of distinguished services in the Middle East from August to November last year —

O B E (military division) —Major (temporary Lieut Colonel) A O Bekenn, M R C S , R A M C , Major Devendra Nath Chakravarti M B Lucknow, I M S , Major (temporary Lieut Colonel) J M Macfie M C M B Glasg , R A M C Lieut Colonel James Melvin, M C M B Aberd , R A M C , Lieut Colonel (temporary Colonel) F G A Smyth, M B Lond , R A M C and Lieut Colonel (temporary Colonel) Q V B Wallace M C , M B Dubl , R A M C

M B E (military division) —Lieutenant H R, Hartnell, M R C S , *R A M C , and Lieutenant (acting Captain) Gerard Loriman,* M B Durh , R A M C

On April 13, at 6 45 P M , Mr Walter Deacon, president of the Pharmaceutical Society, which is celebrating its centenary, will give a talk in the home service on One hundred years of Pharmacy

Since publication of the last list of subscriptions to the Medical War Relief Fund over £900 has been received, bringing the total to over £20,000

A meeting of the North Western Tuberculosis Society will be held at the Tuberculosis Offices, 352, Oxford Road, Manchester, on Thursday, May 8, at 3 P M , when Dr S Vere Pearson will speak on What are we aiming at in Collapse Therapy ?

Notes, Comments and Abstracts

TO HOSPITAL BY AIR

SWEDEN has a service of air ambulances which fly to the help of sick people in remote districts whence other means of transport are slow and exhausting In the past those living in such regions had to travel by Lapp sledge or boat and sometimes took several days to arrive at the nearest hospital—often too late for their lives to be saved Surgeon-General Fritz Bauer reports[1] that there are now four aircraft in the ambulance service, operating from Stockholm, Ostersund and Boden Three are single-engine Junkers, the fourth a double engine Beechcraft In addition to the pilot and mechanic (who are members of the Swedish air force) each plane can carry two stretcher patients and has seating accommodation for two more people Wheeled landing carriages, pontoons or skis can be fitted to the aircraft as required No aerodromes await them in the lonely mountainous regions to which they penetrate, in summer they alight upon lakes, in winter on the snow fields The first Swedish ambulance plane was bought in 1924 at the suggestion of Prince Charles, funds being provided by the Swedish Red Cross and the State Since 1932 the service has been maintained entirely by the State Experience shows that patients stand the journey well, and that most disorders can bear the light strain of flying in modern aircraft Up to August, 1940, some 1700 people had benefited by the service , accidents have been few There are now hopes of providing helicopters or autogyros adapted for stretcher cases , these of course would greatly simplify the problem of landing The Swedish Red Cross and the government are persuading owners of private aircraft to adapt their machines to carry stretchers , subsidies will be given for this purpose provided that the machines are placed at the disposal of the nation in times of war A committee set up by the Royal Aero-Club (K S A K) suggests that an international agreement would be welcome whereby builders of transport aeroplanes would be obliged to equip them to carry stretchers International agreement on this or any other point would indeed be welcome

A HOSPITAL GUIDE TO THE PURCHASE TAX

Mr W E C Baynes, barrister-at-law of the Inner Temple, has codified the purchase tax for the hospital administrator in a leaflet of four pages[2] He sets out briefly the six general principles governing the application of the tax, lists the goods likely to be needed by a hospital which are subject to the tax or exempt from it, and even finds room for an appendix giving the simple drugs and simple chemical compounds which go free No relaxation of the act is made for hospitals or other charitable institutions, though many of their needs are included in the list of exemptions, and where a hospital obtains goods from the wholesaler at a cheap rate the tax will often have to be paid on the higher rate which would be charged to the ordinary purchaser An exception to this will be goods which are put up in special packs exclusively for hospitals Surgical requirements are not subject to the tax, but some of them crop up unexpectedly under other headings—thus tax will have to be paid on india-rubber gloves along with every other kind from fur-lined to fabric, and bandages if they are not made up will, as textiles, have to pay the full 33⅓%

Mrs Clerke Brown of Hestor's Cottage, Kingston Blount, near Oxford, whose son 2nd Lieutenant Charles Clerke Brown was reported missing in June 1940, and later killed, is anxious to get in touch with the relatives of any British doctor who was at the Hôpital Riband, St Omer, last June

The Society of *Chemical Industry will hold the* third of its discussion meetings on the nation's food at B M A House, Tavistock Square, London, W C 1, at 11 A M on Wednesday, April 9, when the subject will be vegetables as food

Six lectures on industrial medicine for medical officers appointed to factories will be held in the medical school of the University of Birmingham on April 19 and 20 Further particulars may be had from the dean of the faculty of medicine, The Medical School, Birmingham 15 int that danger lies The anterior compartment should e opened by two parallel incisions starting opposite e midpoint of the patella on each side and ¾ in away om it, and extending to the top of the subcrureal ouch, whose extent is determined with a finger The ondylar pouches may be opened as well, by cutting on e point of a pair of hæmostats passed back into them rough the lateral incisions , these openings are necesrily too small to drain freely, but they are advisable severe infections In the last war it was common ractice, after opening the joint, to pass rubber tubes own to the opening in the synovial membrane but not to the cavity, and to rest the limb in a Thomas splint ung from a balkan frame, with an extension of 8–10 pulling through strapping or glue on the leg The odern practice of packing the drainage incisions with aseline gauze and immobilising the whole limb in a losed plaster hip spica including the foot and the elvis appears to be sounder The aim of extension as to overcome spasm of the muscles, give rest to the mb and prevent pressure necrosis of the articular artilages But the rest provided by suspension with xtension is that of two cancelled forces and not the omplete immobility imposed by a plaster case The eight removes the pressure from the cartilages, but in oing so tends to open the joint, preventing localisation f the infection and encouraging its spread to the condylar pouches In any case the battle for a septic nee-joint is virtually decided in 4 days—if the infection s overcome within that period, the joint is saved before he cartilage has had time to suffer , if it is not, joint and artilage are lost together

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[1] *Bull Leag Red Cr Socs* 1940 21 102

[2] Central Bureau of Hospital Information Memorandum No 158 Obtainable from the director of the bureau, 12, Grosvenor Crescent, London, S W 1 3½d post free

After drainage and fixation, the patient must be watched anxiously His general condition and his own estimate of the progress of the leg are the only reliable guides If all goes well, the plaster case should be left undisturbed for a minimum period of 3 weeks , if the patient is not better at the end of 4 days, it is usually better to amputate the leg The great danger in septic knee-joints is to hang on too long Most surgeons with experience of the last war would agree that, with this particular injury, there were more lives lost unnecessarily by late amputation than limbs lost unnecessarily by too early amputation In amputating for sepsis in a patient who is gravely ill, the guiding principles are to do as simple and rapid an operation as possible, to leave the divided tissues widely open, and to arrange things so that the permanent stump which will be obtained by a secondary operation later in a clean field can be made as long as possible Disarticulation at the knee with a long anterior flap consisting of skin only is the simplest method, but it leaves a vascular bundle practically unprotected by muscles at the most posterior part of the stump, and in these septic cases is very prone to be followed by secondary hæmorrhage Amputation through the femur just above the condyles, with a long anterior and short posterior flap, is better The flaps should be approximated by two or three stitches over wide slabs of vaseline gauze covering the divided bone and muscles

Infected wounds of the knee-joint were responsible in the last war for a high proportion of fatalities at base hospitals, and it is not surprising that a number of alternative methods for dealing with them were evolved Willems claimed good results by encouraging active movements from the time of drainage , the method is in direct opposition to the basic principle of surgery that injured and infected tissues require rest, and it failed singularly in the hands of other surgeons Jaboulay's plan of postural drainage aimed at making the suprapatellar pouch, opened in the usual manner, the most dependent part of the joint, thus preventing the pus from distending the condylar pouches, where it is very apt to burst into the popliteal space and track into the calf or thigh along the vascular sheaths This was attained by nursing the patient on his face, or with the limb projecting vertically from the bed It is difficult to nurse a patient who is gravely ill and wounded elsewhere in the prone position without moving his septic joint , with a plaster spica the difficulties are less, and the device may often prove useful The vertical position of the limb is most uncomfortable, and involves some degree of circulatory deficiency in the foot Open arthrotomy was tried extensively during the middle period of the war Using a horseshoe incision, like that for a classical excision of the joint, the patella was thrown upwards, and the whole joint laid widely open by dividing the cruciate and lateral ligaments and splinting it in a position of flexion It was hoped that with unrestricted drainage infection would be overcome rapidly, and that a useful stiff leg could then be secured by excision In practice the dressing of these large sensitive surfaces proved very exhausting to the patient, and a state sufficiently clean to justify excision was seldom reached , the majority went on to amputation after about a week Irrigation with Carrel tubes had many advocates, but did not give results comparable to those now obtained by packing the incisions with vaseline gauze and immobilising the limb in plaster The Carrel method is too elaborate for use in military surgery under the conditions prevailing at present , it does not wash out a complicated cavity like the knee-joint, but rather tends to set up eddies that carry infection to fresh recesses, distend the posterior part of the capsule and lead to sinus formation

CLOSED PLASTER

Closed plaster is firmly established as the best method of treating the majority of wounds of the limbs under the circumstances of the present war, but it must confer real immobility or it is worse than useless The surgeon who assumes responsibility for the welfare of his patient must also be responsible for the plaster case that is applied afterwards, though he may not always be able to make it himself Many bad plasters are put on, not through ignorance but because the surgical teams are so hard pressed in coping with the wounded awaiting attention that they cannot give the time necessary for good plaster work A second team, trained by the surgeon, working in tandem with him, and showing him their cases at the end of an operating spell is a satisfactory solution The one-piece plaster case, described by Trueta, made from layers of material cut to pattern and soaked in plaster cream, promises to simplify the application of good casts, for the materials can be brought to the side of the table on a special trolley by a trained sister, and the application is then a matter of minutes only

A good case must immobilise well enough, far enough and long enough It can immobilise well only if it is skin tight over the greater part, with no more padding than a little thin felt over the vulnerable bony points, particularly the acromion,' the anterior superior iliac spines and the sacrum Bony points that were formerly considered to be in need of protection, such as the malleoli, remain comfortable if the cast is moulded round them so closely that no movement takes place between them and the plaster A case must extend far enough to include the joint above and below the injured one A plaster for the ankle must include the knee, for the knee a hip spica is required To immobilise the hip-joint a double hip spica is essential, but it need not extend above the iliac crests , the long Witman plaster extending to the nipples is based on the erroneous assumption that the spinal column can be used, like the stick in the toffee apple, to immobilise the pelvis A plaster for the wrist must go well above the elbow, and one for the elbow or shoulder must include the trunk on a shoulder spica The case must immobilise the joint uninterruptedly *for at least 3 weeks*—the shortest time in which it can be assumed that an infective process is overcome and not merely localised Failure to ensure this is a frequent cause of failure in the surgery of infected joint wounds, for even the slight movement that is unavoidable in changing a plaster may lead to a flare-up of an infection that was walled off, and to the destruction of a joint that might have recovered with movement Changes of plaster are usually undertaken, not because the patient is ill or uncomfortable, but because the discharge has become offensive or has softened one segment of the plaster and destroyed immobilisation A good dressing of fluffed gauze should therefore be applied over the vaseline packs, covered by one or two layers of wool firmly bandaged, and the case should be so constructed that its strongest strut is well away from the wound These measures will protect the plaster, and, if the rest of the case is unpadded, will not interfere with immobilisation drained knee nearly always means limited movement and often complete stiffness afterwards. Where a knee wound in a fit patient is received by the surgeon within 6 hours and is treated by thorough debridement including the removal of all foreign bodies, the synovial cavity at least should be closed by interrupted sutures of the finest catgut. In closing it, any bone lesion should if possible be exteriorised by mobilising or turning down flaps of synovial membrane; owing to the size and mobility of the subcrureal pouch this is often possible with partial lesions of the femoral condyles. Some writers advise that the capsule should be closed as well, but this step is not without risk, since suture of a defect in such a tough structure leads to tension which is inimical to clean healing. The skin may be closed with interrupted sutures in a favourable case, but if there is any doubt it is better to pack the outer layers of the wound with vaseline gauze down to the synovial membrane, rather than to risk a subcutaneous infection which will later invade the joint. After a well-planned and well-executed operation, well-planned and well-executed immobilisation is equally important, and careful supervision even more so. The only apparatus that gives 100% immobilisation of the knee is a plaster spica, and it is therefore better to use this method than to retain the advantages of inspection and extension that a Thomas splint allows. Sulphanilamide should be given for a full 4 days in every case. The progress is judged by the condition of the patient, his chart and the comfort of his leg, and the dressings are left alone for at least 10 days. If evacuation is imperative before this time, no joint wound should be allowed to travel with sutured skin. Whatever grounds there may be for optimism the surface stitches should be removed and the skin wound packed lightly open before the patient is allowed to leave.

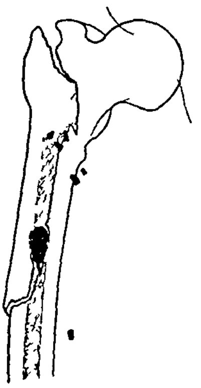

FIG 1.—Sketch of radiogram showing bullet and splinters. These were not removed and did not interfere with union. Some of the fragments emerged through the perinæum.

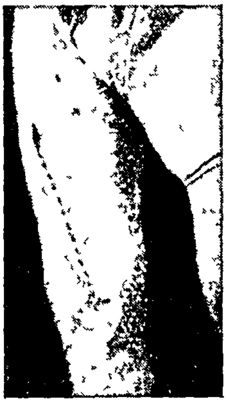

FIG 2.—Limb after removal of plaster. Ink line marks route of bullet. Six months after the injury there was full extension of the knee joint and flexion to a right angle.

Of the third class, wounds with complete fracture of the tibia or femur, little need be said. Such wounds are often complicated by injury to vessels or nerves and demand primary amputation. Where there is no such injury, a debridement as thorough as possible should be done under a tourniquet. The synovial membrane should again be closed as completely as the defect will allow, but further suture is unwise. The wounds are therefore packed with vaseline gauze, and the limb immobilised in a plaster spica. An injury to the head of the tibia is usually more serious than one to the femoral condyles; the bone lesion cannot be excluded from the synovial cavity as can one in the femur, it can less often be excluded from the surface, and the softer cancellous bone is more liable to infection.

WOUNDS SEEN LATER

Wounds of the knee-joint received between 6 and 24 hours after infliction require anxious consideration. Some will be clean enough for debridement, as judged by the appearance of the wound and its surroundings, the condition of the patient, his temperature and pulse, and possibly the kind of fluid that flows or is aspirated from his joint; but at this period the skin should not be sutured. Others will be frankly infected. In between will be cases where the wound is a little angry but the joint is not really septic, where drainage must be established and foreign bodies removed. In these, limited debridement designed to cleanse the track and remove foreign bodies and loose bone fragments should be done, but it is necessary to work cautiously, incising undamaged tissue as little as possible and keeping the dissection to the already damaged zone. The joint should be washed out with weak flavine solution and afterwards the whole track should be packed with vaseline gauze, the synovial hole being left open or closed in part. The limb is immobilised as before in a plaster spica, and the patient put on a course of sulphanilamide.

After 24 hours the bacteria have established their entry and the tissues have established their defences. The time for debridement is past, and the alternatives are expectancy or drainage. The decision will above all depend on whether infection is being overcome or is likely to be overcome, or whether it is getting the upper hand, in short whether the patient is doing well or doing badly. Many cases which, had they arrived earlier would undoubtedly have been taken to the theatre, now appear to have combated their infection. Among such may even be wounds where the projectile is still in the body but out of the joint.

A soldier, wounded at Dunkirk, reached hospital in England five days later with an entry wound on the inner side of the right knee, and synovial fluid pouring out. The bullet had passed up, struck and fractured the femur and was lying in pieces all round the upper part of the thigh (figs 1 and 2); no attempt was made to remove any of the fragments. With drainage and plaster and a course of sulphanilamide he recovered with nearly full knee movement.

A fit patient, good immobilisation, smooth transport and prophylactic chemotherapy may all have contributed to the result. Here the wise policy is to continue immobilisation and sulphanilamide, watch carefully the condition of the patient and the wound, aspirate the joint if need be, be ready to drain or to cut down on a foreign body—in short to pray for the best and watch for the worst.

SEPSIS

As in all wounds, the first and most important indications of infection are to be found in the general condition of the patient, his temperature, his pulse and his appearance. A man with a wound of the knee-joint that is doing well looks well and feels well. If the wound is becoming infected he begins to look ill, and an experienced ward-sister will often notice the change before the patient or the doctor. Pain is the most important single symptom; a joint that is painful is an indication for alarm. Examination of the dressing will tell us more, and the indications of mischief are in the surroundings rather than in the wound itself. If the surrounding skin is soft and cool and the joint is not tender, there is little cause for alarm whatever the appearance of the wound itself. Redness, heat, œdema and tenderness of the skin over the joint and pain when the patella is moved sideways indicate infection. Aspiration will usually be performed to aid the decision, for a recently injured joint, whether infected or not, always contains fluid. Clear or opalescent fluid indicates a healthy reaction, turbid or purulent fluid a failure to react. Some blood is to be expected and has no significance, but hæmolysed blood is of grave import since it betokens a streptococcal infection. A moderate number of mononuclear cells indicates no more than a healthy reaction; but polymorphs suggest that infection is getting the upper hand. Organisms can be identified from the fluid in a few hours. *Clostridium welchii* is the least serious if the infection is purely articular. A staphylococcal infection is grave, but will usually yield to energetic treatment. Infection with a hæmolytic streptococcus is the most dangerous.

As soon as infection has been recognised, the knee should be drained, for it is in the infected but undrained important group and in times of war other cases be expected , Lhermitte (1918) reported four cases trauma with narcolepsy the main symptom The reported by Souques (1918) had narcolepsy with uria, and a case of Haenel (1929) had narcolepsy, plexy and mental changes Daniels (1932) Singer 7), Pollock (1930), Kahler (1921) and Redlich (1917) also reported cases In Adie's first group of 20 s, trauma is not mentioned as a possible ætiological or, although in 2 of the cases an accident had been erienced , one had a minor blow on the head at age of d the other, a man of 48, had symptoms following a on the head with an umbrella Of Kinnier Wilson's ses 1 gave a history of an accident to the head with re concussion two years before the symptoms began

ase 2 —A girl of 14 In June 1937, a heavy piece of lead rom a skylight on to the top of her head She was dazed, continued work all day despite severe headache She did vomit and had no diplopia Next day she returned to k, but fell off her bicycle and she was sent home She was ork for several weeks with severe headache and was very able In November, 1937, she developed attacks of kness of the legs occurring without warning and causing to fall , she was able to get up at once These occurred e or four times a week In June, 1939, she was admitted ospital , no evidence of gross pathology was found on full rological and X-ray examination Two years after the dent she developed attacks of irresistible sleep, coming on ny time, even when eating and occurring several times a They only lasted a few minutes and the sleep was ays dreamless , her sleep at night was normal, but usually urbed by dreams A year after the accident she had eloped an excessive appetite, and polydipsia, but states re was no polyuria Menstruation, regular before the ident, has been irregular ever since Until the accident, was happy, lively, and rather a tomboy type , afterwards was irritable, less sociable, morose, aloof, restless, lacked husiasm and had constant headaches In April, 1940, at age of 17 she married, but minor symptoms persist and is irritable with her husband

This case was seen by Mr Harvey Jackson who nfirmed a lesion in the hypothalamic region It illus- tes many of the symptoms of a third ventricular ndrome—narcolepsy, cataplexy, menstrual irregularity d polydipsia, bulimia and personality changes There no increase of weight, no diplopia, no polyuria provement has been steady , narcoleptic attacks have t been present for some months and the cataplectic tacks have also disappeared She is still altered in rsonality and her menstruation is irregular

Case 3 —A girl of 16, an electrical tester In January, 37, a 2 lb insulator fell on her head over the frontal region e was severely dazed and vomited , she was taken home d immediately fell asleep, being difficult to rouse after some urs Next morning she returned to work, but has no mory of this, and was sent home by the management as e was obviously unfit The headache persisted and she was oubled by diplopia, pains in the left ear and the left side of e face She remained in bed 14 weeks, being treated for ncussion During this time she had attacks of uncontrol ble drowsiness In her sleep she would snore loudly, a thing e had not done before, but she was not always unconscious, nce she could often hear but could not answer Perhaps the ore was an attempt to articulate On getting up, she ould have attacks of sleep in the cinema, during meals, when ading and even on holiday at Blackpool In some of the ttacks she would talk a lot and sing, and was very difficult rouse even for meals Two weeks after the accident, after eavy vomiting, she had two "fits" on one day, in which she as rigid all over, did not bite her tongue and had no enuresis hese attacks continued daily for a time There was no aura eakness of the legs was also noticed , she would fall about nd had difficulty in getting up These attacks were not nduced by any emotional disturbance, but "if I laughed I ecame sleepy again" Excessive appetite was noticed, but here was no polydipsia, nor polyuria nor menstrual changes n October, 1937, she was admitted to hospital for a month he had no fits during this time and only one attack of hyper omnia The cerebrospinal fluid pressure was raised to 200 mm The optic discs showed a pathological congestion with a uggestion of a recent retrobulbar neuritis, the edges being hazy and there was slight diminution in the fields of vision Otherwise, no abnormal neurological or radiological signs were apparent After discharge from hospital the sleep attacks continued and falls were frequent "My knees would suddenly give way" In May, 1939, she was admitted to the National Hospital, Queen Square The visual defect was then considered to be hysterical and was improved slightly by faradism and suggestion She had no sleep attacks Before the accident she was a well nourished, happy and pleasant girl , since she has been cross and irritable and has lost 14 lb in weight She is improving slowly, but is still easily tired, with giddiness, headache and pain of the left side of the face for which the dental surgeon can find no cause Her father died of an inoperable temporosphenoidal glioma

In this case the cataplexy was independent of emotion, but laughter would cause drowsiness There are symptoms, however which suggest an hysterical overlay, notably the loud singing in her sleep , this symptom is also recorded by Singer (1917) in a case of traumatic narcolepsy The so-called "fits" may also have been hysterical , they were never seen by a doctor The narcolepsy attacks, the cataplectic weakness of the legs, the diplopia, the raised C S F pressure, however, are beyond dispute There must therefore be some organic lesion from the original contusion

Case 4 —A district nurse When nursing a patient on Sept 15, 1939, she hit the right parietal region of her head violently against an oak beam She was momentarily dazed, but entered her car and drove away , after a short distance she suddenly vomited and had severe headache and double vision These symptoms continued and on Sept 17 she became unconscious and was afterwards kept in bed for a week , on getting up she felt as if she "had no legs" and could hardly stand up or walk At Christmas she began to suffer from attacks of uncontrollable sleep which she tried to resist , the effort made her irritable and her legs gave way and she fell to the ground The sleep attacks were dreamless, did not interfere with her normal sleep at night, and sometimes came on within an hour after getting up in the morning She was not always unconscious, but had a feeling that her mind marked time and continued to think about the last idea in her mind before the attack The cataplectic attacks coincided with the narcolepsy , she remembers the first attack as associated with "an inability to breathe and a feeling that someone had hit me behind the knees causing the legs to give way" The right arm and hand were also involved in these attacks, a sudden loss of grip causing her to drop articles Early in 1940 the sleep attacks became less frequent, although yawning remained a regular symptom , if she got the desire to sleep she found it better to submit, because resistance caused irritability and foul temper The cataplectic attacks still continue and come on if she tries to overcome the defective vision or to concentrate on mental problems On examination a slight lateral nystagmus was found, but no changes in the optic discs , slight diminution of the field of vision on the right side and diplopia on looking upwards and to the right No other clinical signs were found, but the skull was not radiographed or the C S F tested This case was seen also by Mr Harvey Jackson who suggested that the symptoms were due to a lesion, probably in the form of minute hæmorrhages, near or in the third ventricle There was no bulimia, polyuria or increase of weight She dared not drive her car because it induced sleep

DISCUSSION

In most cases of narcolepsy there is no history of preceding illness, no indication of tumour, as a rule no signs on full neurological examination, and the cerebrospinal fluid is usually normal Cases of this type may be called idiopathic , but I am inclined to agree with Daniels (1934) that they probably owe their origin to an attenuated strain of the virus of encephalitis, not virulent enough to cause the defined picture so well known in 1917 and succeeding years Levaditi (1922) was able to prove by animal inoculation that the virus of encephalitis from human cases retained its activity long after the onset of the disease Hall (1024) suggests that the virus can lie quiescent for a long time and be reactivated from time to time It is difficult to explain why "idiopathic" cases are on the increase , conceivably they are a late result of the epidemic encephalitis of 1917–18 Encephalitis lethargica was a new disease at that time, but there were other epidemics in the past whose nature we do not know, and in some of these disorders of sleep were

IDIOPATHIC AND TRAUMATIC NARCOLEPSY

By A Wilson Gill, M D Edin , M R C P
PHYSICIAN TO THE NORTH STAFFORDSHIRE ROYAL INFIRMARY

TODAY the term narcolepsy is reserved for cases in which there are attacks of uncontrollable sleep, often without known cause The name was first used in this connexion by Gelineau (1800) and similar cases were described by Westphal (1877) and Fischer (1878) In Gelineau's case, the attacks of sleep were associated with attacks of sudden weakness of the legs, to which Henneberg (1916) gave the name cataplexy This is the combination of symptoms still occasionally known as Gelineau's disease and now implied by the term narcolepsy Kinnier Wilson (1928) records that he saw one case in 1907 and failed to find another typical case in the next twenty years, and Spiller (1926) had the same experience Adie (1926), on the other hand, was able to collect 20 cases, and described the disease as by no means very rare, later (Adie 1930) he reported 50 cases Within the last few years, cases have become more common and it is doubtful if this increase can be explained merely by more frequent recognition At the Mayo Clinic a steady increase is reported in the last 10 years

Hypersomnia is often a symptom in organic disease of the brain, especially in tumours of the third ventricle and in the region of the hypothalamus In the serious epidemic of encephalitis of 1917, sleep disturbance was such a frequent concomitant, that it was not surprising to find pathological changes in the hypothalamic region (Economo 1923) Dubois (1896) first suggested that there was an actual " sleep centre " in the floor of the aqueduct and third ventricle Recently a third-ventricle syndrome has been postulated which includes, in addition to hypersomnia and sudden attacks of weakness of the legs, a series of vegetative symptoms due to involvement of the adjacent nuclei of the hypothalamus , these may be disturbances of temperature or of water balance producing polydipsia and polyuria, of the appetite causing bulimia, of the reproductive system causing disturbances in menstruation, and of fat storage causing adiposity It is rare to find all these symptoms present in any one case Certainly typical cases, similar to Gelineau's case, have followed in the wake of genuine encephalitis, though they are few (Hall 1924, Adie 1926)

If the syndrome of narcolepsy with cataplexy can be a direct sequel to organic disease—such as tumours or encephalitis in the region of the third ventricle—we should also expect to find it occasionally, after trauma to the skull, as a result of minute hæmorrhages and subsequent softening of the hypothalamic region I am able to add 3 cases of traumatic narcolepsy to the few already recorded

SO-CALLED IDIOPATHIC NARCOLEPSY

Gelineau's case was a cooper, aged 38, who had an intense inclination to fall asleep even during meals, and would suddenly lose the power of his legs on laughing heartily or on feeling any other pleasurable emotion He could be awakened from his sleep if shaken violently, and at once he was wide awake, his head clear This shows the usual picture The association of the cataplectic attacks with emotion (laughter, anger) are common but seizures can occur independently of emotion In the attacks the patient is utterly powerless to move, he becomes a " mass of toneless muscle ", usually the paresis is general, sometimes localised (one arm, both legs, jaw) The attacks seldom last long enough for a full neurological examination to be made, but Kinnier Wilson (1928) was able to record in one case that the pupils reacted to light, slightly but definitely, no corneal reflex was present, the knee-jerks were completely abolished on both sides and the plantar reflex on one exposed foot was extensor These are remarkable observations considering the attack only lasted about 90 seconds Attacks lasting 15 min , as reported by Quensel (1925) and others, are unusual Attacks of cataplexy are so commonly brought on by laughter that many patients hold themselves in check and will not dare a hearty laugh It is doubtful whether the narcoleptic attacks are really sleep attacks , most patients are completely unconscious during then, but some can afterwards report all that went on though they had been powerless to answer or speak except for an occasional grunt Superficially the patients appear to be in a natural sleep , some will awake to a light touch or a call, others require more strenuous stimulation Most on awakening declare they are quite fresh and are at once wide awake, but some are irritable, mentally dull or even angry, as if their needs had not been duly satisfied The attacks usually come on without warning, but anything tending to induce sleep—such as a heavy dinner or the monotonous hum of a motor-car—will cause sleep more readily than normally The patient usually feels an imperious desire to sleep which cannot be resisted and is often dreamless The usual nocturnal sleep is not influenced and dreams occur as usual An attempt to resist the narcoleptic attack may bring on an attack of cataplexy Usually both attacks coincide, but either may occur without the other Certain personality changes have been noted in cases of narcolepsy Depression is exceptional, but irritability and argumentativeness, poor memory and poor concentration are common The following case is typical

CASE 1 —A woman, aged 30, training to be a teacher, while on holiday at the seaside in July, 1929, suddenly developed attacks of uncontrollable sleep and weakness of the legs She would sleep on a chair, in tramcars, in shops and on the sea front, she was also emotionally upset and would readily burst into tears After 2 weeks both kinds of attack had passed off, but on returning to work she could not attend to the lectures and in 1930 was advised to give up the idea of becoming a teacher During this time, her menstrual function, previously regular, became irregular and painful and remained so till 1938 There was no history of influenza or other acute illness and no reason to suspect a previous attack of encephalitis In 1931 she started to train as a nurse, apart from being easily tired, she was well In 1932 the narcoleptic attacks recurred She slept during meals, in writing letters, on buses and in her lectures At first by a great mental effort and by hurrying about, she could avert the attacks, but soon they became irresistible and could not be denied. If she was left alone the sleep attacks would last about a quarter of an hour, but gross stimulation with a pin would successfully shorten an attack The attacks were frequent and dreamless yet she slept and dreamed normally at night She awoke clear unless awakened forcibly, when she tended to be irritable and would yawn a lot In 1934 the cataplectic attacks recurred " My legs would suddenly feel weak especially if I was angry or amused Both hands felt weak and I would often spill cups of tea I never fell down and it was all over in a second " Narcolepsy and cataplexy occurred independently of each other, the latter being usually induced by laughter She had no other symptoms and no pathological signs Treatment by ephedrine had no effect in 1934 In 1938 a temporary improvement followed the use of Benzedrine and she improved still more on caffein in 1939 By this time, however, she was obviously beginning to improve and in 1940 the cataplectic attacks had completely disappeared while she was still taking caffein 5 gr daily She still complains of paræsthesia over the facial muscles but she had only three attacks of narcolepsy in the last year

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TRAUMATIC CASES

In the case of an injury to the head followed by narcolepsy, damage to the third ventricle and hypothalamus might be expected Cases of traumatic narcolepsy with cataplexy have been reported from time to time in which symptoms have developed immediately after the injury to the head or a short time later This

IDIOPATHIC AND TRAUMATIC NARCOLEPSY

By A Wilson Gill, M D Edin , M R C P
PHYSICIAN TO THE NORTH STAFFORDSHIRE ROYAL INFIRMARY

Today the term narcolepsy is reserved for cases in which there are attacks of uncontrollable sleep, often without known cause The name was first used in this connexion by Gelineau (1800) and similar cases were described by Westphal (1877) and Fischer (1878) In Gelineau's case, the attacks of sleep were associated with attacks of sudden weakness of the legs, to which Henneberg (1916) gave the name cataplexy This is the combination of symptoms still occasionally known as Gelineau's disease and now implied by the term narcolepsy Kinnier Wilson (1928) records that he saw one case in 1907 and failed to find another typical case in the next twenty years, and Spiller (1926) had the same experience Adie (1926), on the other hand, was able to collect 20 cases, and described the disease as by no means very rare, later (Adie 1930) he reported 50 cases Within the last few years, cases have become more common and it is doubtful if this increase can be explained merely by more frequent recognition At the Mayo Clinic a steady increase is reported in the last 10 years

Hypersomnia is often a symptom in organic disease of the brain, especially in tumours of the third ventricle and in the region of the hypothalamus In the serious epidemic of encephalitis of 1917, sleep disturbance was such a frequent concomitant, that it was not surprising to find pathological changes in the hypothalamic region (Economo 1923) Dubois (1896) first suggested that there was an actual " sleep centre " in the floor of the aqueduct and third ventricle Recently a third-ventricle syndrome has been postulated which includes, in addition to hypersomnia and sudden attacks of weakness of the legs, a series of vegetative symptoms due to involvement of the adjacent nuclei of the hypothalamus , these may be disturbances of temperature or of water balance producing polydipsia and polyuria, of the appetite causing bulimia, of the reproductive system causing disturbances in menstruation, and of fat storage causing adiposity It is rare to find all these symptoms present in any one case Certainly typical cases, similar to Gelineau's case, have followed in the wake of genuine encephalitis, though they are few (Hall 1924, Adie 1926)

If the syndrome of narcolepsy with cataplexy can be a direct sequel to organic disease—such as tumours or encephalitis in the region of the third ventricle—we should also expect to find it occasionally, after trauma to the skull, as a result of minute hæmorrhages and subsequent softening of the hypothalamic region I am able to add 3 cases of traumatic narcolepsy to the few already recorded

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Gelineau's case was a cooper, aged 38, who had an intense inclination to fall asleep even during meals, and would suddenly lose the power of his legs on laughing heartily or on feeling any other pleasurable emotion He could be awakened from his sleep if shaken violently, and at once he was wide awake, his head clear This shows the usual picture The association of the cataplectic attacks with emotion (laughter, anger) are common but seizures can occur independently of emotion In the attacks the patient is utterly powerless to move, he becomes a " mass of toneless muscle " , usually the paresis is general, sometimes localised (one arm, both legs, jaw) The attacks seldom last long enough for a full neurological examination to be made, but Kinnier Wilson (1928) was able to record in one case that the pupils reacted to light, slightly but definitely, no corneal reflex was present, the knee-jerks were completely abolished on both sides and the plantar reflex on one exposed foot was extensor These are remarkable observations considering the attack only lasted about 90 seconds Attacks lasting 15 min , as reported by Quensel (1925) and others, are unusual Attacks of cataplexy are so commonly brought on by laughter that many patients hold themselves in check and will not dare a hearty laugh It is doubtful whether the narcoleptic attacks are really sleep attacks , most patients are completely unconscious during then, but some can afterwards report all that went on though they had been powerless to answer or speak except for an occasional grunt Superficially the patients appear to be in a natural sleep , some will awake to a light touch or a call, others require more strenuous stimulation Most on awakening declare they are quite fresh and are at once wide awake, but some are irritable, mentally dull or even angry, as if their needs had not been duly satisfied The attacks usually come on without warning, but anything tending to induce sleep—such as a heavy dinner or the monotonous hum of a motor-car—will cause sleep more readily than normally The patient usually feels an imperious desire to sleep which cannot be resisted and is often dreamless The usual nocturnal sleep is not influenced and dreams occur as usual An attempt to resist the narcoleptic attack may bring on an attack of cataplexy Usually both attacks coincide, but either may occur without the other Certain personality changes have been noted in cases of narcolepsy Depression is exceptional, but irritability and argumentativeness, poor memory and poor concentration are common The following case is typical

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The method was used to observe the effect of anti-holinesterases in these epileptic outbursts, because there as recently been increasing interest in the effect of holinergic substances on the activity of the central ervous system Schweitzer, Stedman and Wright 1939) have reported changes in the motor activity of the pinal cord after introducing anticholinesterases into the pinal theca, and Miller (1937), Bremer (1938), and Miller, Stavraky and Woonton (1940) have reported hanges in cerebral electrical activity after the introduction of eserine, acetylcholine and atropine into the cortex More recently McKail, Obrador and Wilson (1941) have found striking alterations in the responses to electrical stimulation of the motor cortex after these substances have been injected into the carotid artery

All this work on cerebral activity has been based on open experiments in animals The cortical electrical discharges of the epileptic offer an opportunity to carry this work further by making observations on human subjects, and it is possible that any result obtained might be applied to the study of the ætiology of epilepsy

This paper describes the method used and the results obtained with eserine and Prostigmin

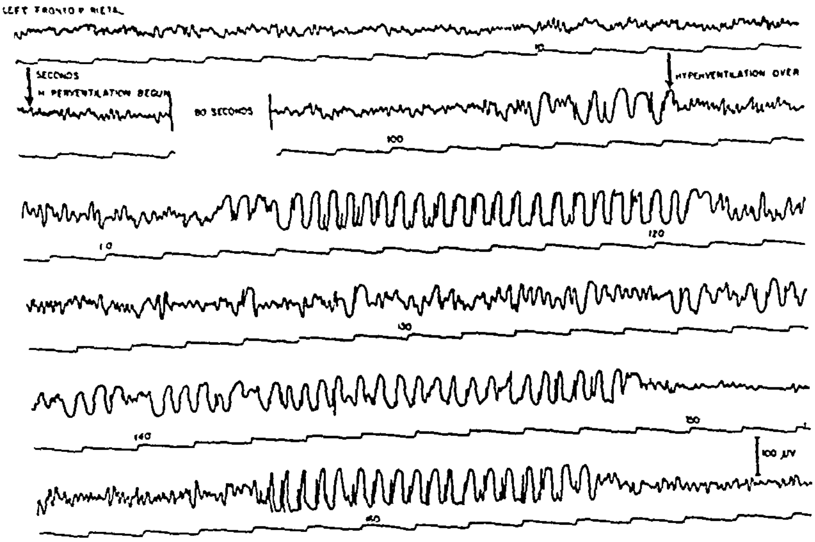

FIG 1—A continuous electroencephalogram from the left hemisphere of a patient with petit mal epilepsy The record reads from left to right, and from above downwards Time is in seconds Overbreathing for 100 sec produced a small outburst of large waves with a frequency of two a second This was followed in 8 sec by alternating spikes and waves characteristic of petit mal There were two further outbursts before the record returned to normal The total time occupied by these epileptic discharges after similar periods of overbreathing was used to determine the effect of eserine and prostigmin on petit mal

EXPERIMENTAL METHOD

Epileptic subjects and normal controls were used A pair of electrodes were sealed to the scalp with collodion simplex, contact being made with Cambridge electrode jelly The electrodes were connected to a condenser-coupled amplifier which motivated an ink-writing oscillograph from which continuous records were obtained on moving paper (fig 1) One electrode was placed at the hair line over the frontal lobe and the other over the parieto-occipital region, so that they recorded changes taking place over a large area of cortex Spontaneous epileptic attacks—even the more frequent subclinical ones—are usually so capricious in their appearance that they are not reliable for experimental purposes Data were therefore obtained from attacks induced by raising the pH of the blood by hyperventilation (Gibbs, Gibbs and Lennox 1939) The patient was shown how to hyperventilate and it was found that steady overbreathing for 100 seconds was enough to produce an epileptic outburst of a petit-mal type in the subjects used The subjects were instructed to hyperventilate for 100 sec every 15–20 min and to try to maintain the same depth of overbreathing each time The experimental procedure calls for considerable intelligent cooperation on the part of the subject and obviously requires careful selection of suitable patients

The respiratory rate was recorded while the expired air was collected in a Douglas bag and measured The experiments were begun about 3 hours after a meal, thus ensuring a fairly stable blood-sugar level, the subjects sat comfortably in a quiet room and repeated records were taken for periods up to 3 hours after an injection had been given The duration of the induced epileptic discharge was measured during and after each period of hyperventilation. Fig 1 shows the response of an epileptic subject's E E G to overbreathing Several epileptic outbursts often occurred after hyperventilation and they were occasionally associated with momentary changes in consciousness and behaviour The sum of their duration in seconds was taken to represent the total epileptic activity resulting from the preceding hyperventilation and this factor was plotted graphically after each experiment (see figs 2–5)

RESULTS WITH ESERINE

Epilepsy induced by overbreathing—Physostigmine salicylate (eserine) B D H was injected subcutaneously in doses of 1–2 mg in nine experiments on five subjects In seven this dose did not give rise to any symptoms, and in six of these seven there was a diminution in the epileptic activity after hyperventilation. This improvement began between 15 and 30 min after the injection and lasted for a further 50 min In two instances the improvement was maintained for more than 100 min. after the injection, at which time the experiment was discontinued The epileptic activity ceased completely in four experiments (fig 2) This prolonged remission in the epileptic outbursts will be referred to again later Examples of the changes obtained in the E E G are represented graphically in figs 2 and 3 In one instance there was no change in the epileptic activity occurring after overbreathing, and in the remaining experiment there was an increase in the epileptic activity after injection of 1 0 mg of eserine, although the subject had on two previous occasions shown a great improvement after 1 5 mg In the two instances where symptoms followed the injections there was an increase in the epileptic activity after overbreathing In one of these, injection of 1 5 mg of eserine was followed by an increase in the duration of epileptic discharges which began 20 min after the injection and passed off 60 min later. The subject then had slight abdominal discomfort and nausea The remaining subject received 3 0 mg and in 30 min became pale and cold, with sweating, salivation, nausea, colic and vomiting There was an increase in the epileptic activity which was maximal 70 min after the injection (fig 4)

Spontaneous epilepsy—An attempt was made to alter the incidence or duration of spontaneous epileptic discharges with eserine in six experiments on four subjects A dose varying between 1 and 2 mg was given on four occasions without any subsequent symptoms There was a reduction in the amount of spontaneous epilepsy in two and in the other two no significant change could be seen In two subjects who experienced some nausea and abdominal discomfort without vomiting there was a definite increase in the epileptic activity One man received 3 5 mg, and the other, a small boy of thirteen, 1 5 mg of eserine subcutaneously

RESULTS WITH PROSTIGMIN

Epilepsy induced by overbreathing—Prostigmin was given on eight occasions to four subjects In seven experiments 1 5 mg was injected subcutaneously and in one 2 mg was given In all the experiments there was a significant increase in the epileptic activity seen striking—for example, in the epidemic in Tubingen in 1712–13, the disease known as nona in Italy in 1889–90, and Dubini's electric chorea in Italy in 1846 The number of cases in which narcolepsy can be associated with a definite encephalitis are relatively few The usual sequel of encephalitis is parkinsonism Adie (1926) in his series of 20 cases mentions 2 patients in whom narcolepsy and cataplexy followed encephalitis lethargica, one a boy of 17 and one a man of 20 Pollock (1930) reports the case of a girl who after an attack of encephalitis lethargica developed narcolepsy with sudden *attacks, associated with laughter, of muscular hypotonus* causing her to fall to the ground

Disturbances of sleep occur in organic diseases of the brain, other than encephalitis Pette (1923) found an area of softening in the tegmentum, between the substantia nigra and the aqueduct, in a man who lay asleep for three months prior to his death Luksch (1924) reported a case of infective endocarditis complicated by continuous sleep for a fortnight before death, and found at necropsy an embolic abscess in the grey matter of the caudal part of the third ventricle and in the wall of the aqueduct Soca (1900) reported the case of a girl of 18 with prolonged sleep where a tumour was found penetrating into the third ventricle and Righetti (1903) has reported a similar case Jefferson and Harvey Jackson (1939) have reported the effects of a series of tumours and summarised the symptoms of third ventricular syndrome In narcolepsy it may safely be assumed that the lesion, whatever it may be, involves this region, and that trauma affecting that part of the brain is capable of producing any of the symptoms, including narcolepsy, cataplexy, polydipsia, bulimia, personality changes and disturbances of the menstrual cycle In war-time, when skull injuries will be common, traumatic cases are likely to occur And it is also worth nothing that the recognition of narcolepsy in non-traumatic cases may save an occasional soldier from punishment if found asleep at his post

The prognosis is uncertain in all cases, but the chances of recovery are probably greater in the traumatic than in the encephalitic variety Treatment is unsatisfactory Some patients improve on ephedrine, benzedrine or caffeine Daniels found that one patient improved after encephalography, but this has not given constant results in other cases The absence of physical signs and the tendency to laugh and sing in the attacks (as illustrated in one of my cases) has caused some observers to suspect a hysterical basis for narcolepsy, but the symptoms cannot be evoked by suggestion and no permanent effect has been produced by psychotherapy or psycho-analysis Gillespie (1927) has reported on a case of cataplexy (without narcolepsy) as having improved with modern psychotherapy, but the results were not lasting

SUMMARY

Narcolepsy is a symptom complex, not a disease In the absence of tumour or other gross pathology, narcoleptic symptoms are often the result of a localised mild encephalitis due to an attenuated form of the virus Most cases give no history of such an acute illness, but narcolepsy and cataplexy may occur in the course of, or following, an attack of epidemic encephalitis

Trauma to the skull may be expected to cause similar effects if damage is localised in the region of the hypothalamus and the third ventricle Three cases are described in which it is fair to assume that the accident to the skull was the responsible factor

Such cases are organic, and not, as still described in some textbooks, hysterical Symptoms produced by suggestion may be superadded, as they may in any *organic disease, and may be removed by superficial* psychotherapy There is no case yet on record where the whole picture has been altered or improved materially by psychotherapy even by deep analysis

I am indebted for the notes of cases to Dr Bruce MacLean, Dr J A Davenport and Dr C H Young

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ACTION OF ESERINE AND PROSTIGMIN ON EPILEPTIC CEREBRAL DISCHARGES*

BY

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SQUADRON LEADER, R A F (V R)

W RITCHIE RUSSELL,
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EPILEPTIC *attacks are accompanied* by outbursts of cortical electrical activity which can easily be recognised by electroencephalography (Gibbs, Lennox and Gibbs 1936) These outbursts are sharply delimited and are made up of a rhythmic pattern of waves whose form varies with the type of epilepsy Their size and duration have a direct relationship to the severity of the clinical attacks but short outbursts with similar wave forms are often seen without any clinical accompaniment These small attacks disturb the rhythm of cerebral electrical activity as seen in the electroencephalogram (E E G) but are not large enough to interfere with consciousness or to produce any clinical concomitant They have therefore been called subclinical or "larval" attacks (Gibbs, Gibbs and Lennox 1937) These subclinical attacks may occur at short intervals even though the clinical fits are infrequent This is particularly the case in petit mal, where outbursts of a characteristic type are seen (fig 1) The ratio of subclinical to clinical attacks varies greatly from patient to patient but in any one subject it is fairly constant Thus the anticonvulsant effect of a drug can be assessed by observing the amount of epileptic activity occurring in a few minutes in the E E G record, and the study of this activity provides an experimental method for the study of epilepsy

These subclinical epileptic attacks have been used by Gibbs, Lennox and Gibbs (1940) as a measure with which to investigate the effect of alterations in blood gases, blood pH and blood-sugar (Gibbs, Gibbs and Lennox 1939) on the incidence of epilepsy These workers found that petit-mal activity is readily induced by a fall in blood-sugar or by an alteration of the acid-base balance to the alkaline side Such an alteration in acid-base balance can be conveniently caused by overbreathing and it has been found that hyperventilation in cases of petit mal is usually followed in a few seconds by a subclinical attack This procedure is useful for diagnostic purposes and it has been used in the present study in the following manner

Cooperative patients were asked to overbreathe at a fixed rate, with the same respiratory excursion and for the same length of time every 10 or 15 minutes The amount of epileptic activity resulting was assessed by measuring the time on the E E G record taken up by characteristic abnormal wave forms (fig 1) The effect of various drugs on the amount of epileptic activity resulting from a known precipitating cause could then be observed For instance a record was obtained from a subject with petit mal who overbreathed for a fixed

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* Presented to the Physiological Society in Cambridge, Dec 19, 1940

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eserine the dose was too small to modify this increment

DISCUSSION

The opposite effect of small doses of eserine and prostigmin on the cortical electrical disturbances associated with epilepsy is most striking It may depend on a different mode of action within the central nervous system, for Schweitzer, Stedman and Wright (1939) have pointed out that eserine is a tertiary ammonium base which is fat soluble and therefore may enter the parenchymal cells, whereas prostigmin is a quaternary ammonium base and being water soluble exerts its maximal effect outside the cell, possibly at the synapse The first is a central convulsant, but petit mal, with which this paper is concerned, may well be the result of simple depression of nervous activity, so that the present results are not necessarily at variance with those of Schweitzer and Wright (1937) who found that eserine caused an increase in spinal activity while prostigmin depressed it The present results may, on the other hand, depend on the peripheral changes produced by eserine and prostigmin, but this is unlikely since both have a similar peripheral parasympatheticomimetic action Although changes in blood-sugar have been reported (Hrubetz 1937), the doses used in these experiments were apparently not large enough to produce any significant change Petit mal can readily be produced by raising the blood pH, but the amount of overbreathing necessary to produce attacks was constant in these experiments, although the alterations in epileptic activity were considerable This suggests that a change in the blood pH was not the cause of the results obtained Further and more precise observation of the blood pH will be necessary to establish this observation A point in favour of a causal relationship between the blood pH and the increase in epileptic activity with prostigmin and eserine might be the association of nausea and vomiting with the changes seen in the E E G Vomiting results in a depletion of HCl with a shift of acid from blood to stomach and consequent temporary alkalosis Such a condition would favour the production of petit-mal epilepsy, but several of the subjects in this investigation showed increased epileptic activity without any symptoms, so that the change is probably unimportant

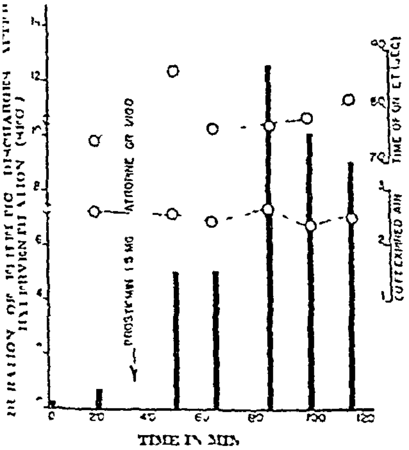

FIG 5—The effect of 1 5 mg of prostigmin with gr 1/100 atropine subcutaneously on petit-mal activity induced by repeated standard periods of overbreathing (100 sec) The volume of air expired during the overbreathing and the time of onset of the attacks has no constant relationship to the amount of epileptic activity

It is so far impossible to localise the site of action of the anticholinesterases in petit-mal epilepsy, but it has been shown that several peripheral effects of the substances are not causally related to the changes observed There is chemical and experimental support for the suggestion that the action is a central one (Schweitzer, Stedman and Wright 1939) but more data are required to establish this hypothesis

In view of the beneficial effects of small doses of eserine, clinical trial has been undertaken in a few selected cases Some have had striking temporary remissions, and a larger group is being studied At the most the results justify a further study of the rôle played by the cholinergic mechanism in the initiation or maintenance of epileptic cerebral activity.

SUMMARY

In six out of seven experiments carried out on epileptic patients eserine in doses not large enough to cause symptoms reduced the petit-mal activity seen in the E E G With large doses the epileptic activity was increased

Prostigmin invariably caused an increase in the petit-mal activity in ten experiments The effect of eserine was reversed by prostigmin and the effect of prostigmin and of large doses of eserine was abolished by atropine

Other factors known to precipitate petit-mal epilepsy were controlled and the results suggested that the effect may be a central one, but further work is being undertaken to attempt to establish the mode of action

A study of the effects of other autonomic drugs on the electrical activity of the cerebral cortex offers a new approach to the investigation of the ætiology of epilepsy

We are grateful to Lieut Colonel G O Chambers, R A M C, for permission to publish the data included in this paper, to the medical officers for coöperating in the work, and to Miss J K Reynell, B Sc, for technical assistance The apparatus used in the experiments has been lent to the Royal Air Force by the National Hospital, Queen Square, and a grant towards the expenses incurred has been made by the Medical Research Council

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MENINGITIS WITH NASAL DISEASE

DUE TO STREP. VIRIDANS

By D R Cameron, M D St And
ASSISTANT PHYSICIAN TO YORK COUNTY HOSPITAL

The following case seems sufficiently rare, both in its incidence and its fortunate ending, to be worth recording

A boy, aged 9 years, had had a transient pharyngeal infection, from which he had recovered quickly, and apparently completely The illness here recorded started suddenly 3 weeks later, with headache, vomiting, and rise of temperature to 103° F When I first saw him, about 36 hours after the onset, he was hardly conscious, restless, and resentful of any interference Considerable head retraction was present, with Kernig and Brudzinski signs positive There was distinct puffiness below the left eye, and the movements of the eyeball were limited He was removed to the York City Fever Hospital, where a *lumbar puncture* was done The cerebrospinal fluid was under considerable pressure, turbid, and contained numerous pus cells and gram-positive cocci, which culture showed to be streptococci of the viridans type Treatment was begun with 1 g of sodium sulphapyridine intramuscularly followed by 1 g of sulphapyridine every four hours by mouth. On account of the eye signs, a radiogram was taken of the nasal sinuses, and this indicated an infection of both maxillary antra As the patient continued to be desperately ill, Mr R Thomas, on the evening after admission, punctured both antra and drained the left, which contained pus, opened and drained the left frontal sinus, on the floor of which a little pus was found, and exenterated the left ethmoid, which was necrotic At the same time similar amounts of Soluseptasine were substituted for the sulphapyridine Cultures from the infected sinuses were made, and a *Streptococcus viridans* again found

During the next two days the boy's condition steadily improved, and this improvement continued On the third day after operation a lumbar puncture showed fluid with 200 cells per c mm, mostly lymphocytes, cultures sterile After 18 g. in all of the sulphonamides had been given, a leucopenia was found (4500 white cells per c mm) The drug was stopped and 5 c cm of *pentnucleotide* was given, and in five days the white count had risen to 8700 Eighteen days after admission the patient was well enough to be discharged in the E E G In three cases there were no symptoms, but in five the characteristic symptoms of nausea and abdominal discomfort arose, requiring subcutaneous injection of atropine sulphate in four cases A typical result is shown in fig 5

Spontaneous epilepsy—Prostigmin was given subcutaneously in doses of 0 6 mg and 1 5 mg in two subjects In both there was an increase in the incidence and duration of the spontaneous attacks One had nausea and abdominal discomfort, the other was symptom-free

RESULTS WITH ESERINE FOLLOWED BY PROSTIGMIN

In two experiments an injection of 1 5 mg of eserine produced a decrease in epileptic activity 1 5 mg of prostigmin was then injected and the decrease was altered to an increase above the initial level In one of these experiments induced attacks were used and in the other spontaneous attacks

RESULTS WITH ATROPINE

Small doses of atropine sulphate (gr 1/150) given simultaneously with eserine or prostigmin did not seem to modify the results Gr 1/100 atropine reduced the amount of epileptic activity induced by overbreathing when injected after an increase had been produced by prostigmin, and a similar dose used independently reduced the number of induced and spontaneous attacks The results with atropine will be reported in detail later

MODE OF ACTION

The effect of eserine and prostigmin in modifying epileptic activity may be central or peripheral The following possible factors were investigated

Respiratory exchange—Epileptic activity would increase if the respiratory exchange were facilitated, for washing out CO_2 would raise the blood pH When possible the depth of overbreathing was determined by measuring the expired air which had been collected in a Douglas bag system during each period of hyperventilation There was no significant alteration in the total volume of gaseous exchange during 100 sec hyperventilation in thirteen experiments with large and small doses of eserine and prostigmin (see figs 4 and 5) The individual variations were no greater than those obtained in a series of control experiments without drugs On the other hand, it was surprising how uniformly a cooperative subject could maintain a steady level of hyperventilation in repeated experiments

Blood-sugar—An increase in epileptic activity might have been caused by a fall in blood-sugar (Gibbs, Gibbs and Lennox 1939) Samples of blood were therefore removed after each period of overbreathing and the blood-sugar estimated by the Folin-Wu method The doses of eserine and prostigmin used did not result in any constant change in the blood-sugar levels, although changes have been produced by larger doses (Hrubetz 1937) Details of the results obtained will be reported later

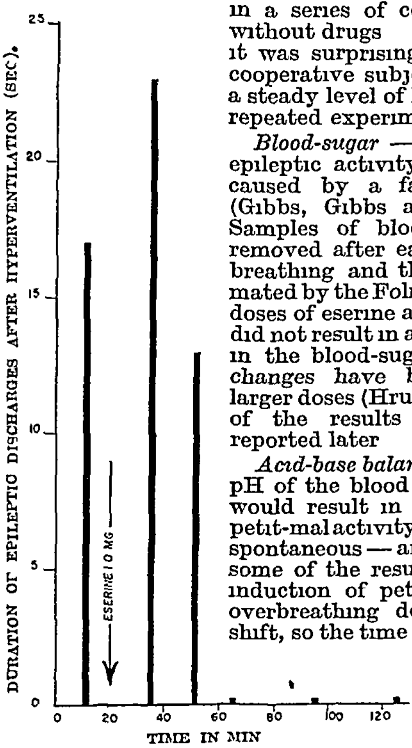

FIG 2—The effect of 1 mg of eserine on the number of seconds of petit mal activity induced by repeated standard periods of overbreathing in the subject whose record is shown in fig 1

Acid-base balance—A shift in the pH of the blood to the alkaline side would result in an increase in the petit-mal activity—both induced and spontaneous—and might explain some of the results obtained The induction of petit-mal epilepsy by overbreathing depends on such a shift, so the time of onset of epileptic activity after beginning overbreathing was measured in each case and was found to be remarkably constant in each experiment For instance, in one subject epileptic discharges were seen 54 ± 4 5 sec after beginning over-breathing, while in another 79 ± 6 5 sec were necessary, while the total gaseous exchange per min was 1 1 cu ft in the first and 1 5 cu ft in the second There seemed to be no relationship between the amount of epileptic activity induced by overbreathing and the change in blood pH necessary to produce it, as judged by the time of its onset during the period of overbreathing (figs 3 and 5) This was strong presumptive evidence that changes in the pH of the blood were not causally related to the changes obtained by the anticholinesterases In order to confirm this observation it will be necessary to determine the exact pH of the blood in the condition of the experiment For this, determinations with a glass electrode system and a direct coupled amplifier are being made

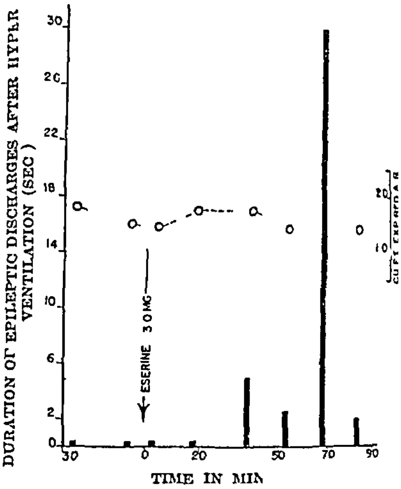

FIG 4—The effect of 3 mg of eserine on the same subject as in fig 2, under identical experimental conditions The volume of expired air represents the total respiratory exchange during 100 sec of overbreathing

Psychological factors—From clinical experience the distress associated with symptoms resulting from large doses of prostigmin or eserine might be expected to cause an increase in the incidence of fits Careful note was kept of the patient's state and his symptoms were noted as they arose A decrease in epileptic activity was never observed when such symptoms were present, but an increase occurred with prostigmin in four experiments in the absence of any clinical sequelæ of the injection In the other cases symptoms were associated with the increase in epileptic activity

RESULTS IN CONTROLS

Eserine and prostigmin did not produce any abnormal response in the E E G after overbreathing in three normal subjects The experimental procedure was repeated without any drugs in five of the patients and there was no constant change in the degree of epileptic abnormality after standard hyperventilation In three cases there was a gradual increase in the amount of abnormality with each repeated period of overbreathing The changes already described were independent of this effect, but it is possible that in the one subject who showed an increase in epileptic activity after 1

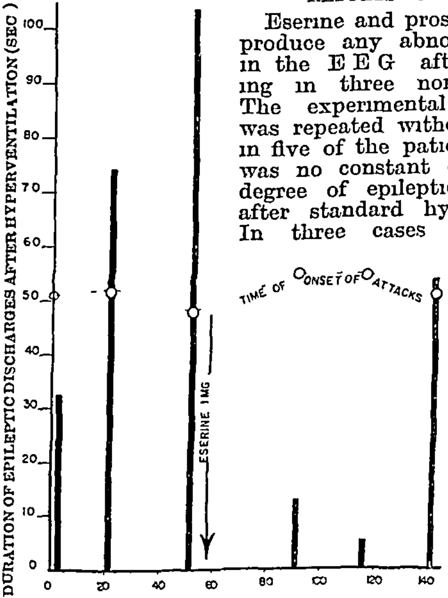

FIG 3—The effect of 1 mg of eserine on the number of seconds of petit mal activity induced by repeated standard periods of overbreathing In this subject repeated overbreathing caused a steady increase in the epileptic activity, in the absence of any drugs

On Dec 19 the abscess was needled and thick pus found. Culture: *Staphylococcus aureus*, no tubercle bacilli. Blood count: red cells 4,650,000, Hb 82%, white cells 6000 (polymorphs 71%). On Dec 30 the abscess was aspirated again, and 40 c cm of pus withdrawn. Culture as before. A diagnosis of staphylococcal osteomyelitis of the spine was made and the patient was immobilised in a plaster bed. By March 11, 1940, his temperature was still swinging and he was given a course of sulphapyridine, 25 g, blood sulphapyridine levels were: first day, 8 2 mg, second day, 11 65 mg, third day, 5 82 mg per 100 c cm. No clinical improvement was noted. On March 1 a course of sulphathiazole was given. A single dose of 2 g was followed by 1 g 4-hourly until a total of 25 g had been given, blood-sulphathiazole levels were: first day, 4 71 mg, second day 11 35 mg per 100 c cm. After this course he continued to show steady improvement. On April 23 he was transferred to Claybury Emergency Hospital under the care of Mr L C Oliver. On Aug 1 he was removed from the plaster bed and put into a plaster jacket, which he wore for 6 weeks. By Nov 21 his general health was good and he weighed 9 st 13 lb. Radiography showed the abscess to have been absorbed and that there was bony fusion between the 5th and 6th dorsal vertebræ. His weights during treatment were: Dec 28, 1939, 7 st 4 lb, Jan 10, 1940, 7 st 5 lb, March 9, 7 st 9 lb, Nov 21, 9 st 13 lb. The erythrocyte sedimentation rates (Westergren) were: Jan 2, 104, Jan 12, 61; March 15, 75; April 8, 50, Nov 21, 7.

This type is most often seen in adults. The onset is more gradual and the symptoms are from the first referred to the affected vertebra. Unless the organism is isolated from an abscess or from some pyæmic focus elsewhere in the body these cases may be diagnosed as tuberculosis of the spine. Some have been treated by bone-grafting with excellent results. Two cases of this type have been treated at the London Hospital in the last two decades. The first had a bone-graft performed for supposed tuberculous infection but later developed staphylococcal abscesses in other bones, the second was treated by aspiration of a spinal abscess with immobilisation of the spine. Both recovered. We have presented this case to illustrate the difficulties in diagnosis in this type of spinal infection and also to show that chemotherapy may play a part in the treatment. Improvement certainly followed the administration of sulphathiazole but there was no striking difference in the clinical course of the disease, as compared with that seen in similar cases. Blood-cultures were not done because the patient did not show the clinical picture of septicæmia. Up to the present we have not had the opportunity of treating a fulminating case with chemotherapy and as far as we know no such case has been published since sulphathiazole came into use.

We would like to thank Dr W R Thrower for help and advice, and Messrs May and Baker for supplying sulphathiazole (Thiazamide).

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PLASTERS WITHOUT TEARS —The slab technique for application of plaster-of-paris casts, using standard patterns, saves both time and mess, and Messrs T J Smith and Nephew Ltd have done useful service in summarising present practice in a booklet "Preparation of Plaster Casts" and in offering a set of patterns to users of their wide "Cellona" material. The technique described in the booklet agrees with that recommended by Trueta, G R Girdlestone (*Lancet*, 1940, 2, 287) and W S Creer (*Ibid* Jan 4 1941, p 9). On page 4 it would have been well to have explained the reason for leaving a narrow gap between adjacent edges of slabs. This allows the plaster to expand if the limb swells after its application, and is thus a valuable safeguard against the danger of constriction of the circulation. The shoulder-spica pattern could be improved by cutting out a semicircle for the neck. Nursing of the patient in plaster is perhaps outside the scope of this brochure, but though the success of plaster work depends on good patterns and good application it depends almost as much on watchful care and ex t nursing after the plaster is applied.

Medical Societies

ROYAL SOCIETY OF MEDICINE

AT a meeting of the Section of Epidemiology and State Medicine on March 28 with Dr WILLIAM BUTLER in the chair, a discussion on

Pulmonary Tuberculosis in the Royal Navy

was opened by Surgeon Rear-Admiral S F DUDLEY F R S. He described how up to 1900 the incidence of tuberculosis in the Navy shared in the decline of this disease in the general population. Since 1900 in spite of the continued fall for the country as a whole the case-incidence in the Navy has remained at about 2 per 1000 although the greatest efforts have been made to ameliorate the environment by better ventilation, dust-extraction and improved diet, and to improve diagnosis by periodic overhauls of the men. This apparently critical morbidity is about twice that in the Army and R A F. and is higher than in comparable sections of the civilian population although the Navy is a selected body of men. Among the officers the morbidity is less than half that among the ratings, and ratings who become officers share in the reduction, while those who remain on the lower deck maintain their old higher rate. These findings suggest that an important factor in preventing improvement in the Navy is overcrowding—i e, allotment of space for work and for sleeping accommodation. Little further reduction in overcrowding can be expected—there is a tendency for an increase of the ratio of machinery to men in the development of modern warships. The problem before the Navy is therefore to detect latent tuberculosis before the patient becomes ill and coughs up tubercle bacilli. For this purpose ordinary physical examinations have been proved useless and new methods must be found which are cheap and rapid. The whole naval force must be examined periodically and not just on entry as recruits. This is feasible since tuberculosis appears to be contracted on the ships themselves—the whole ship's company form the home-contacts of any case—and the men change their ships every two to three years, at which time they could be conveniently examined at one of the three naval depots.

Miniature radiography Admiral Dudley said offers the method of choice and it was decided largely through the initiative of Surgeon Commander A Robinson Thomas to X ray the whole naval force on every change of commission. The first miniature-radiography department was opened under Surgeon Commander W G C Fitzpatrick at Chatham and the statistics of the first 18,000 men examined are presented. Over 100 suspects were found, but following the principle of X raying with a full-size film all suspected cases this number was reduced considerably. In all 69 cases were sent to hospital and 47 of these were finally diagnosed as active tuberculosis and invalided out making a final case-incidence of 2 per 1000. Half the active cases had positive sputum which is an improvement on the 90% usually found in the Navy by the ordinary methods of diagnosis. It is hoped that the percentage of sputum-negative cases will increase. Most of the men with active disease had no complaints. The incidence of suspected active tuberculosis on the miniature films was considerably higher for the older men than for the younger. Summing up, Admiral Dudley pointed out the advantage of the method both to the patient and to the naval community. He expected the case-incidence to increase at first owing to the number of unrecognised cases already present. The final efficacy will partly depend on how far tuberculosis in the adult is due to fresh infections and how far to the breakdown of resistance. It will also depend on what is the minimal dose required to produce disease in susceptible subjects.

Surgeon Commander FITZPATRICK, who organised the Chatham department, described its routine. A Stanley Cox unit is used with 35 mm film, 100 mA power, tube-screen distance of 36 in. and an exposure time of 0 3–0 6 sec. The cost per case is less than 1*d* and 200 cases can be examined in an hour.

Surgeon Commander THOMAS pointed out that the method is as useful for the community as a whole as for the Navy and may reduce the high costs in life and money

Before the sulphonamides were used, the fatality in cases of this kind approached 100% Hagerup (1936) reported two recoveries in meningitis following ethmoiditis, but the symptoms in these cases were comparatively slight Appelbaum (1938), however, reports one case of recovery from severe meningitis caused by the *Strep viridans* following ethmoidal infection, and treated with sulphonamides and spinal drainage without operation The time to operate, if operation is attempted, appears to be when localisation has occurred, as it had in this case Hagerup advises operation when a pleocytosis of the cerebrospinal fluid has appeared Bowers (1939) advises operation if signs of meningeal irritation are present Goodyear (1939) advises against operation until there is evidence of pus formation in the sinuses affected

In the case here described, it seems unlikely that the patient would have survived without the sulphonamides, though this class of drug is not generally supposed to have a dramatic effect on an infection with non-hæmolytic streptococci Of the two compounds used, soluseptasine appeared to be the more effective

My thanks are due to Mr Thomas, Dr S G Platts, Dr J N F Fergusson, and to Dr N J M Hession, for their help with this case

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HODGKIN'S DISEASE IN THE BLADDER

By Ralph Phillips, M S Lond , F R C S , D M R E
RADIOTHERAPIST TO ST BARTHOLOMEW'S HOSPITAL, LONDON

In several hundred cases of Hodgkin's disease investigated and treated at St Bartholomew's Hospital, this particular manifestation in the bladder has not been seen before, and it seems to be the first case diagnosed in life and successfully treated Lebowich [1] recorded a case in which intermittent attacks of hæmaturia and frequency were the first symptoms , the presence of pyelonephritis and renal failure obscured the diagnosis, no treatment was given, and the patient died 20 months from the onset , autopsy showed a dense lymphadenomatous infiltration of the bladder, rectum and rectovesical pouch, and there were deposits in all the abdominal organs , enlargement of the cervical glands had been noticed during life, but had been taken to be metastases from a malignant process Lebowich found only 5 published cases of Hodgkin's disease in which involvement of the bladder had been recorded

In June, 1940, a man of 32, feeling absolutely well, presented himself before a medical board for service in the R A F , but was rejected because he had " lumps in the neck " A month later he noticed a slight but irritating rash on the lower limbs, and in August he began to suffer from frequency of micturition By the beginning of September the frequency had become hourly by day and night, and was accompanied by acute pain and a yellow discharge at the end of the act The urge to micturate became so frequent that it amounted to virtual incontinence, and after passing a few drops of blood on one occasion he came to hospital and was admitted on Sept 21

He was pale and looked ill, partly owing to loss of sleep from the pain and frequency The right cervical and right axillary lymph glands were greatly enlarged and were typical of lymphadenoma, the diagnosis being confirmed as lymphadenoma verum by biopsy , a radiogram of the chest showed enlargement of the mediastinal glands also Apart from the rash on the lower limbs and deep tenderness in the suprapubic region there were no other physical signs , the temperature was normal, but the pulse rate was raised to 110 The white-cell count was 19,600 per c mm , and there was an eosinophil count of 980 per c mm (5%) The urine was sterile on culture, and no tubercle bacilli were found X-ray therapy to the thorax and neck was begun on Oct 28, and, on the supposition that there was a subacute non specific cystitis which had not yielded to the usual measures, doses of 50 r *were given to the bladder at 5 day intervals* The enlarged glands rapidly decreased in size, but the pain and frequency persisted On Nov 14 cystoscopy by Mr Kenneth Walker showed the mucous membrane of the bladder to be studded with greyish-yellow nodules the size of grape seeds , there were also a few submucosal hæmorrhages From Nov 18 onwards ten daily doses of 140 r were given to the bladder, the pain and frequency began slowly to improve, and the man was discharged convalescent on Dec 16 By the middle *of January micturition was normal and the enlarged glands* had disappeared On Feb 13 cystoscopy showed a normal bladder, and the patient felt completely restored to his usual good health

My thanks are due to Major R Bodley Scott and Mr Kenneth Walker for permission to publish this note

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[1] Lebowich, J *Amer J Cancer*, 1937, 30, 758

STAPHYLOCOCCAL OSTEOMYELITIS OF THE SPINE

BY

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SURGEON, E M S

I N Blusger,
F R C S
SURGEON, E M S , AND

Kenneth M A Perry,
M D CAMB , M R C P
PHYSICIAN, E M S

Staphylococcal osteomyelitis of the spine has been fully described by Wilenski (1934), Kulowski (1936) and Turner (1938) It may be divided into three main clinical types The first as a rule occurs in children or young adults and is characterised by a sudden onset with the symptoms of a severe bacteræmia The local signs are often subordinated to those of the general infection and the diagnosis is usually obscure, often only being made at necropsy Treatment in these cases is directed to combating the blood-stream infection, the patient rarely living long enough for the local treatment to become a problem During the last twenty years at the London Hospital 13 cases of this type were admitted and every one of them died Necropsy was performed on all of them and death was shown in every case to be due to bacteræmia with abscesses in the lungs and other viscera A correct diagnosis was made during life in only 4 instances, the remainder being labelled retention of urine, appendicitis, acute abdomen and cellulitis of the neck , 3 were treated as pneumonia

The second type has been ably described by Stammers (1938) The onset is sudden with general malaise and pain in the back An abscess rapidly forms, which may either point externally or form an intraspinal extradural collection, in which case signs of pressure on the cord become evident and meningitis may supervene later with fatal results Drainage of the abscess after laminectomy is probably the best line of treatment in these cases Stammers reported 3, of whom 1 died We found 2 fatal cases in the London Hospital records, both of whom died from a terminal meningitis

The third type is sufficiently rare to make it worth while publishing the following case, especially in view of the fact that the patient had the benefit of treatment with sulphathiazole

CASE-HISTORY

On Dec 15, 1939, a man aged 53 was admitted with the following history Three months before admission he had complained of general malaise with pains all over the body His wife had noticed that he developed an angular deformity of his spine He had had persistent fever and had lost 3 st in weight Recently he had complained of a band like pain around his chest He was an ill, wasted man, weighing 7 st 6 lb Temperature 100° F , pulse rate 108 , respirations 24 There was an angular deformity at the level of the 5th thoracic vertebra His fingers were slightly clubbed The mediastinum was not *displaced* There was diminution of movement, dullness and absent breath sounds at the right base A provisional diagnosis of carcinoma of the lung with secondary deposits in the spine was made *Radiography* showed complete collapse of the 5th and partial collapse of the 6th dorsal vertebræ There was an opacity spreading downwards and outwards from this re
to be a retropleural abscess

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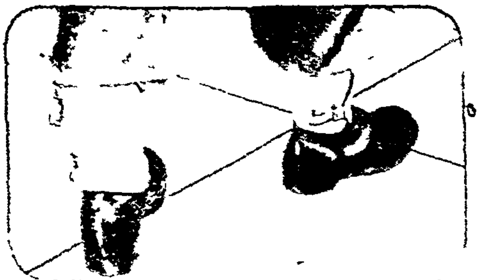

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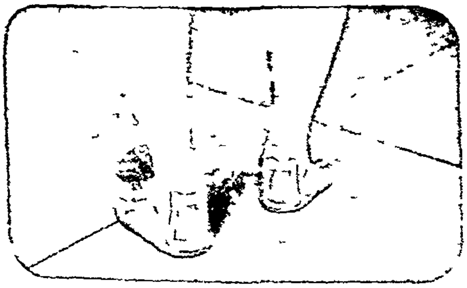

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of tuberculosis He told how one large firm claimed to have saved considerable sums by X raying its staff and their relatives periodically The miniature method, while perhaps not quite as good as full-size X rays, is superior to screening

SIR WILSON JAMESON said that mass radiography offers the only method of the future for improving early diagnosis but he pointed out that difficulties may be encountered in persuading men to accept the sharp drop in standard of living between their wages and national health-insurance benefit

The discussion was continued by Dr S COCHRANE SHANKS who stressed the importance of speed in the technique of miniature radiography for large groups, and the CHAIRMAN warned the meeting that we must expect a halt in the improvement of tuberculosis in the country for some time to come owing to the reduced standard of living and the housing shortage which he feared would accompany and follow the war

Reviews of Books

Man on his Nature

The Gifford Lectures By SIR CHARLES SHERRINGTON, O M London Cambridge University Press Pp 413 21*s*

MODERN use of the experimental method in science dates from the Renaissance, yet since inductive reasoning gave place to the more workaday hobby of collecting and studying facts the mind of man has made an astonishing journey Sir Charles Sherrington establishes the contrast by setting out first the scientific standpoint of Jean Fernel, the sixteenth century physician to Henry II of France, who represents the best opinion of his day, and compares his conclusions (not his intelligence or judgment) with those we can form today on the basis of greatly increased factual knowledge Where Fernel distinguished living and non-living we can speak of energy composed ultimately of identical units, in our world such units are linked to form systems which achieve a temporary equilibrium In the living cell Sherrington shows us this equilibrium as a foaming, stirring physicochemical state constantly changing and as constantly restoring itself In non-living matter the difference is of degree not of kind, the physicochemical equilibrium is still impermanent and unstable, but its changes are less violent and swift, the table is less ephemeral than the professor who leans on it The living is thus no longer cleanly distinguishable from the non-living, in a world composed of energy we find ourselves able to study different manifestations of energy, that is all Our ancestry, too, is humbler than Fernel supposed, and the origins of life lie not in a moment of sublime creation but in the physicochemical adventures at surfaces of vapours, fluids and solids in a cooling world, though here we are extending knowledge to the length of a reasonable guess Many things which Fernel, lacking data, misinterpreted we can now measure and check as manifestations of energy One still eludes us—mind Conscious thought is not energy It provokes no measurable changes in any part of us, and we even lack any sense-organ by which to observe it We can hazard no guess on the nature of mind because here we still lack data We cannot even say certainly at what level in the animal scale it appears, some observers claim that even the one-celled animal is capable of learning by experience Sherrington would have us accept energy and mind as a working biological unity, although we cannot describe the how of that unity

"An individual organism with recognisable mind is a space-time system which the energy concept because of that mind fails to cover fully In such an instance the two concepts prove to be complemental our being is a unity whose behaviour we can follow only by including the two concepts and treating them as having 'contact utile' with each other" On this basis we can study them, experience shows, fairly Conscious mind is of recent origin, a humble affair as yet "man is awake and does and sees," but drowsily still The nature of conscious mind and the relation of mind and brain are of acute practical importance to the neurologist and the psychiatrist Until they are established conclusions in both fields must be tentative and empiric, and science expects caution when theories are formulated or announced We can at least be sure that brain and mind have developed together "Between the individual human mind and the individual human forebrain considered in time and space there is 100 per cent correlation"

"Man on his Nature" is too rich in knowledge, too profoundly stirring to the wits to be discussed relevantly in a few brief paragraphs No single message emerges from a book which like a ripe carpus is crammed with new thoughts in seed But one magnificent certainty is pressed home, it is of the nature of living things to grow, willy-nilly Our circumstances have made us, and at last have made conscious mind If it were not useful to our survival we should not have it and we cannot stop it becoming We can look with hope towards the mind of man to come as being suprahuman (as we know human) and thus, perhaps, more keenly aware of the "values" which conscious mind discovers "His oncoming had been an outstripping of other minds His dominance pillars on mind Will that ensure its future?"

Microscopic Anatomy of Vertebrates

(2nd ed) By JAMES I KENDALL, D Sc, assistant professor in biology in the City College, New York London Henry Kimpton Pp 342 17*s* 6*d*

FEW handbooks on comparative histology are available for the student and this work provides a sound and pleasantly presented introduction to the subject The different systems are taken in separate chapters after the manner of standard textbooks of histology, and in each the main anatomical and histological variations characteristic of the different classes of vertebrates are described It is a pity that all sections could not be as fully worked out as those on the integument and the digestive system, which are excellently done Unfortunately a textbook of this type has self-imposed limitations and the curious minded must seek elsewhere for the fuller details—Dr Kendall has provided a bibliography for this purpose A section on technique gives useful hints on fixation and section-cutting

Synopsis of Materia Medica, Toxicology and Pharmacology

By F R DAVISON, M B, M Sc, assistant professor of pharmacology, University of Arkansas London Henry Kimpton Pp 633 25*s*

BELIEVING that pharmacology is "an integral part of medicine," Dr Davison deals with it from the clinical viewpoint A therapeutic classification is adopted To the practitioner and senior student this will be an advantage, but for the junior student the arrangement has the drawback that information concerning many important drugs (e g mercury) is scattered through various sections But the beginner will welcome Dr Davison's introductory chapters on general principles of pharmacology, pharmaceutical preparations and processes, and prescription-writing The work is synoptic only in the sense that an attempt has been made to eliminate superfluous matter and the author has tried to keep an eye on the utility of the drugs included, there is a vast amount of information in its 600 pages of small type Phraseology is concise and the imperative mood is often used to achieve brevity, but historical notes serve to leaven the somewhat terse and prosaic presentation Students will appreciate the prescriptions incorporated in the therapeutic sections Many important chapters are prefaced by short physiological surveys, and Dr Davison's special knowledge of toxicology is reflected in his skilful correlation of this subject with the pharmacological and therapeutical parts of the text For the sake of the English reader, in future editions the lists of official drugs and preparations might perhaps include a selection from the British Pharmacopœia

Black's Medical Dictionary

(16th ed) By J D COMRIE, M D, F R C P E London A and C Black Pp 1006 20*s*

THIS "Special War Edition," as it is called, has been thoroughly revised Among much other fresh material it contains notes on the sulphanilamides and a supplement on the management of air-raid casualties including those caused by gas Notes on each subject are necessarily short, but they are simple and expressed in non-technical language Apparently at whim de

some cases but not in others

THE LANCET

LONDON SATURDAY, APRIL 12, 1941

TUBERCULOSIS AND WAR

AFTER the war of 1914–18 a well-known professor of medicine in Vienna remarked that it had been a colossal experiment in metabolism. Much the same might have been said about it in relation to tuberculosis. In both cases it was uncontrolled experiment vitiated by almost every kind of variable factor. It is too early yet to determine what effect the present totalitarian war will have on the tuberculosis mortality of Europe, but there is good reason to face what facts we have. Prof. E. L. COLLIS[1] describes how the resisting power of the population to tuberculosis was weakened by food shortage in the last war, especially in middle Europe. Mortality from all forms of tuberculosis had steadily diminished in the second half of last century, the decline being greatest at the beginning of life, smaller in early adult life, and least in more advanced life. During the years immediately preceding the war the rapid fall in early life continued, but it slowed down in the age-group 20–25, and quickened in the group 45–55. Then came the war, and the mortality steadily rose from 1914 to 1918. COLLIS considers that the disturbance of the male population by military service was so great that it is impossible to draw conclusions from figures relating to them and confines his remarks to the statistics for females. Analysing the figures in age groups, he points out that no change occurred in the first 5 years of life, but that, thereafter, until about the age 30, a steady percentage increase in mortality became manifest, growing as year succeeded year until 1918. From about 30 onwards to old age there was no increase. GREENWOOD has shown that this rise among females was directly proportional to their employment as munition workers; it did not happen in districts where munitions were not being made. Lastly in the age-group showing the war rise in mortality the rate of fall lagged in the years which followed the war; this lag was visible until the generation born after the war grew old enough to replace all members of that age-group. But the 1918 figures were disturbed by another factor—the influenza epidemic. This great pandemic followed the usual course, taking its heaviest toll of the older generation, until the last 8 days of June, when a high mortality suddenly appeared in the young adults—that is, in the age-groups upon which tuberculosis had been hammering harder and harder during the previous 4 years of war. This sudden alteration in mortality was unique. COLLIS quotes from a Ministry of Health report, "It may be doubted whether so sudden and so complete a change of age-incidence can be paralleled in the history of any other disease—yet all the weight of medical testimony goes to show that the influenza of 1918 was essentially the same as that of former years." He ends with the query, what is it reasonable to expect as 1939 passes to 194–?

Dr. FREDERICK HEAF and Dr. LLOYD RUSBY note that on Sept. 3, 1939, the tuberculosis service became seriously disorganised because of the anticipated blitzkrieg. Tuberculosis officers were chiefly concerned with A.R.P., many sanatoriums were converted into class 1 and 2 war hospitals, operative treatment was temporarily brought to a standstill (in some cases even before a many-staged procedure had been completed), care committee work largely ceased, the open-air schools were closed and the children billeted in the country, and hundreds of tuberculous persons—many of them in an infective state—were discharged from institutions to their homes. It is easy to be wise after the event; the best that can be said of an intolerable situation is that in our preoccupation with war and its new untold possibilities in the air we forgot our peace-time responsibilities to a large and infective class of the population. At the end of 1939 there were 70,000 sputum-positive cases on the dispensary registers, including 10,000 in London alone. In due course the position was taken in hand by the appointment of a standing advisory committee by the Ministry of Health, and 6000 beds were released. Meanwhile the dispensary services began to re-establish their organisation; by the summer of 1940 a "fair degree of normality" existed again. Then came the threat of invasion and the period of intensified bombing. There were many sanatorium beds in that restricted strip of land, 20 miles wide from Edinburgh to Bournemouth, which constituted the dangerous area, and a plan for evacuation had to be worked out, beginning with helpless stretcher cases and gradually extending to the ambulant patients. The bombing of London and the dispersal of known infective cases to the shelters produced yet more anxieties, and to those who know the difficulties which even in peace-time surround the chronic ambulant sputum-positive case these anxieties will occasion no surprise. Lastly there was the ebbing and flowing tide of evacuation from vulnerable areas with its attendant risks of the billeting of the tuberculous patient on healthy homes. What the future holds in store for the tuberculous patient, especially if rationing becomes more severe, none can say. HEAF and RUSBY take the view that the man living at home and unfit for work is going to feel more acutely than his fellows the stringency of rationing. But we started this war with certain advantages over August, 1914. Our tuberculosis mortality was lower, the number of available beds was greater, and the dispensary system much better equipped and operating throughout the country.

ASSAY OF ANALGESICS

IN the mind of the experienced practitioner certain pains are equated to particular analgesics; he would not offer aspirin to the patient "climbing the walls" with ureteric colic, nor resort to morphine to comfort the fat woman with fibrositis. Having selected the appropriate drug, the amount ordered is determined by a number of considerations, including the range recommended by the pharmacopœial commissioners, the size of the patient and the severity of the pain. The principles of posology have been worked out in considerable detail by pharmacologists, and for such remedies as diuretics, gastric antacids and antiseptics it is often possible to obtain independent evidence that these rules are accurate enough for clinical

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[1] *Tubercle*, 1940, 21, supplement p. 1.

[2] *Ibid*, p. 171.

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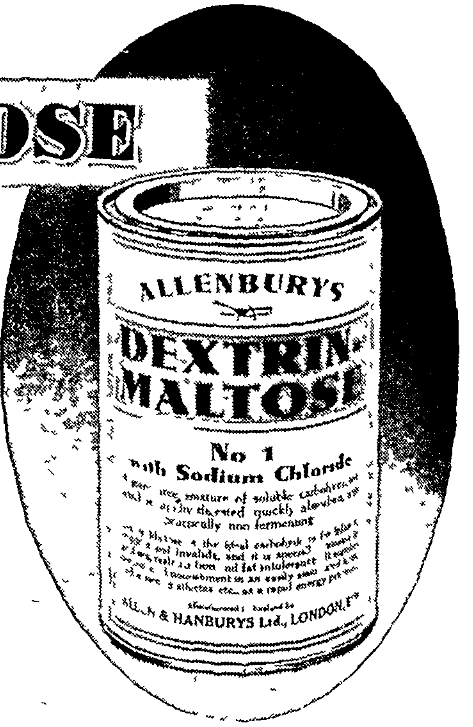

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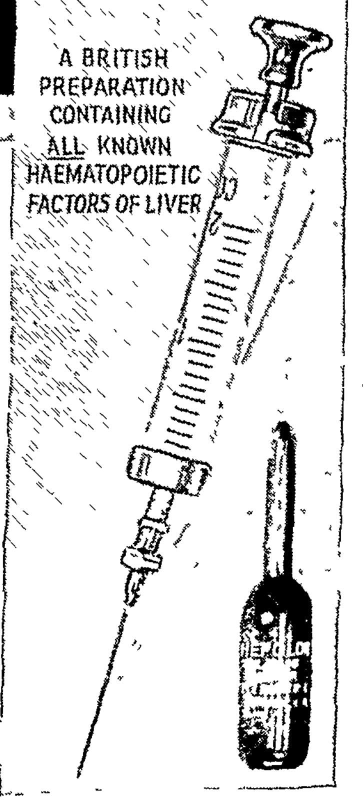

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Telephone Bishopsgate 3201 (12 lines) *Telegraphic Address* Greenburys Beth London hyperemesis, nor is the theory of syncytial or endometrial embolism more convincing, since sickness is by no means a constant feature in cases of hydatidiform mole or chorion epithelioma, where the absorption of tissue cells from the uterus should be greater than in the normally pregnant. So-called toxic vomiting in most cases is the end-result of a long period of sickness that has been labelled neurotic in the first instance. Any vomiting from whatever cause if unrelieved for a sufficient time results in dehydration, metabolic changes and liver damage. It would therefore be well if the label "neurotic hyperemesis" were abolished, and if this was done many cases would never become toxic. Many a woman with hyperemesis has, owing to her physician's perseverance in his diagnosis and treatment of the case as one of neurosis, insensibly lapsed into a severe and irreparable state of toxicity. If all cases of severe vomiting were primarily treated as toxic and potentially dangerous valuable time would not be lost.

Since most cases of hyperemesis develop from persistence or exaggeration of the physiological early morning sickness or nausea of pregnancy, it behoves us to eliminate this early and thus make a prophylactic attack on hyperemesis. Simple remedies of diet and discipline will often suffice. The severer class of case demands immediate and more drastic treatment; it can be recognised by the dehydration, raised pulse-rate, depletion of urinary output, dry, furred tongue, sore mouth and sordes about the lips, ketosis, anxious facies, icterus, albuminuria, loss of weight, lowered blood-pressure, insomnia and mental symptoms. Any or several of these are grave phenomena and may suddenly develop in a woman who has merely been vomiting more persistently than usual. FAHMY relies on three essentials in the treatment of these severe cases: rest, fluids and bowel lavage. Rest he obtains by hospital or institutional treatment and the exhibition of bromides or Luminal; he does not advise morphine or opium, since they increase the dryness of mouth and tongue so distressing in these cases. Fluids must be pushed to the point of adequate hydration by the rectal or intravenous route, and it is important to be sparing with salt. To overstep the salt requirements in a dehydrated patient will only upset the intercellular metabolism and may lead to œdema of the lungs and embarrassment of an already toxic myocardium. Probably the best prescription for prolonged and heavy intravenous therapy is 5% glucose in 1/5 normal saline as advocated by AVERY JONES and NAUNTON MORGAN.[2] Colonic lavage must be used intelligently and sparingly in the severer cases, since its empirical advantages may well be offset unfavourably by the disturbance that an over-enthusiastic cleansing of the bowel causes to an already exhausted patient. The question of when and if to terminate the pregnancy can best be answered by the clinical judgment of the obstetrician. If, after a short period of trial of rest and hydration (at most a few days), the patient is no better, it is justifiable to empty the uterus. If done betimes the operation is relatively safe; later it is not only harmful but useless.

On Monday afternoon Sir CHARLES WILSON was elected to succeed Sir Robert Hutchison as president of the Royal College of Physicians of London.

Annotations

ST THOMAS'S IN THE COUNTRY

APRIL 16 promises to become one of the most important dates in the history of St Thomas's Hospital, for on that day its branch hospital in Surrey will come into existence. Although to the casual passer-by the structure on the Albert Embankment may not seem unduly bomb-shaken, its utility as an efficient hospital has been so reduced that the governors, having been informed that the damage to property, equipment and drugs lies in the region of £1,000,000, have decided that the only way in which the traditions and service of the hospital can be maintained is by opening an annexe in the country. For this purpose they have been fortunate in obtaining a hutted hospital which was erected by the military authorities. It is proposed to begin with 72 beds; this number will be quickly increased to 200 and after some time to 360 beds. The reason for this final delay is the necessity for using some of the huts, until more can be erected, for the accommodation of the medical, nursing and lay staff. From the beginning the new hospital will have all the facilities of a modern hospital, with laboratories and X-ray department. An ambulance service has been organised both in Surrey and in London to bring patients to the new hospital. All the members of the honorary staff who are not in one of the Services will have beds in the new hospital and, as our advertisement columns have shown recently, arrangements have been made for registrars and house men. The curriculum of the medical school is being altered to come into line with the new hospital and the first batch of clerks and dressers are starting there at the beginning of the summer term. This move does not mean that the hospital in Lambeth Palace Road is being deserted. Ever since the evacuation of the hospital in September last year full outpatient facilities have been maintained and these will be continued on almost the same lines as in peace-time—incidentally, the outpatient attendances have been steadily mounting during the winter and spring. In addition, the present two wards will be maintained for civilian acute cases, whether medical or surgical, and air-raid casualties, as well as the small obstetrical unit which has been kept fully occupied ever since the hospital was evacuated.

In 1862, on the occasion of the opening of the temporary premises for St Thomas's in Surrey Gardens, we expressed ourselves as follows:

> The gardens, extending over more than twelve acres, have been carefully restored, and will present a feature novel amongst metropolitan hospitals. The student will here, in modern academic groves, pursue his studies in a little oasis of quiet and beauty, including every appliance for health, comfort, and relaxation, situated in the centre of an enormous population, such as can alone require a large hospital and supply the elements of medical, surgical, and obstetrical education. The patients themselves will enjoy the advantages of free air, repose, pleasant prospects, and exercise to an extent unknown in other London hospitals. The situation and capabilities of the place are felt to be so excellent that the eccentric idea of building St Thomas's on some distant rural spot must be abandoned.

Alas, what seemed so desirable a site in 1862 is not ideal now, and many of us are wondering whether the present move indicates at long last a break in the peculiar English tradition that patients should be nursed in the midst of some of our most squalid and over-populated districts rather than in the open country.

SYMPTOMS OF THREADWORMS

THE finding of threadworms in the stools of children is often too readily accepted as an explanation of vague disturbances in health. To get over this difficulty in their investigation into the symptomatology of threadworm infection T. H. Weller and C. W. Sorenson[1] chose purposes. The position with analgesics is different, for until recently we have had no means of measuring pain, and this has delayed the advent of accurate knowledge, particularly with reference to optimum dosage. Thus it has perhaps been too readily assumed that within toxicological limits analgesic potency is directly proportional to the size of the dose. Recent work seems to show that this simple linear conception of the relationship is erroneous and that an asymptote represents the true state of affairs.

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[2] Jones, F. A. and Morgan, C. N. *Lancet*, 1939, 2, 611.

[1] *New Engl. J. Med.* Jan. 23, 1941, p. 143.

WOLFF, HARDY and GOODELL of Cornell have extended their work on the measurement of pain and the pain threshold-raising action of the opiates[1] by making similar investigations on the commoner non-opiate analgesics, including aspirin, phenacetin and amidopyrin.[2] As before, pain was produced by a 1000-watt lamp, controlled by a rheostat, focused on the subject's forehead. They find that the minimal effective dose of aspirin as an analgesic is 0.9 mg. per kg./body-weight (about gr. 1 for a patient of 60 kilos). The smallest amount that produces the greatest threshold-raising effect is 0.3 g. (gr. 5). If the dose is increased beyond gr. 5 the rate of excretion rises so rapidly that the higher doses give comparatively little prolongation of analgesic action. Thus aspirin gr. 5 produced analgesia for 4½ hours, and six times this dose prolonged the effect by little more than an hour. Various combinations of analgesics were studied, including the well-known A.P.C. powder, and it was found that the threshold-raising effect of these compound powders was no greater than that of their most effective ingredient. As far as analgesics are concerned, then, the time-honoured custom of prescribing basis and adjuvans seems to be seriously threatened. On the other hand, it was noted that the sedative and hypnotic side-effects of these combinations of drugs were summative. Ethyl alcohol in doses of 30–60 c.cm. (½–1 oz.) has a threshold-raising effect rather greater than that of aspirin; here again, the larger doses do not increase the intensity of the effect though their action is more prolonged. This remarkable advantage of alcohol over aspirin revealed by the time-action curve is worthy of note by pharmacologists who, in the laboratory at any rate, have scarcely done justice to the virtues of a double whisky. The mechanism of the analgesic action of alcohol is confirmed and clarified by these investigations, for the subjects tested experienced feelings of contentment and detachment. This emotional state resembled that produced by opiates and resulted in "an ability to dissociate pain perception from the pattern of reaction to pain." In their previous researches on the opiate analgesics, these workers found that the potency of morphine and its derivatives in raising the pain threshold was considerably diminished by the presence of another uniform painful stimulus—produced by a sphygmomanometer cuff kept on the arm at 220 mm. Hg for 40 min. By contrast, the antagonism between pain and threshold-raising action is slight or absent in the case of aspirin, phenacetin, acetanilide and ethyl alcohol. Amidopyrin, phenacetin and acetanilide are often thought to be more potent analgesics than aspirin, but the impression is not confirmed by this investigation; apparently there is little to choose between them, whether we consider threshold-raising power or duration of analgesia. There seems therefore to be little justification for using these drugs, for it cannot be claimed that any of them have additional therapeutic effects which make them indispensable. On the contrary, their toxicity is such that the use of acetanilide no longer receives official sanction and amidopyrin has been largely removed from proprietary remedies because of its liability to lead to agranulocytosis. Even phenacetin, though harmless in therapeutic doses, should be employed cautiously in view of its relationship to acetanilide. Compared with these compounds aspirin has only low toxicity, and in the light of the present findings it may reasonably be regarded as the best universal analgesic that has yet been evolved.

This work reveals more clearly than ever the gap that exists between the synthetic analgesics and morphine. An analgesic as effective as morphine but lacking the unpleasant side-effects and complications which often attend its prolonged use has yet to be found. Some proprietary remedies purport to fulfil these requirements, but most of these claims are discredited by the most casual examination of the list of ingredients, and the others can now be tested by the technique of WOLFF and his colleagues. New analgesics are urgently needed, and this accurate method of assessing their potency should stimulate collaboration between the clinical pharmacologist and the synthetic chemist. These new methods for the quantitative investigation of pain may also find applications in other fields of research. Thus the observation made at Cornell that ergotamine tartrate has no effect on the pain threshold, though a negative finding, is none the less valuable as a contribution to the elucidation of the action of this drug in migraine. Again, in the realm of psychiatry, there is plenty of scope for the study of pain and analgesia among patients suffering from psychoneurosis.

HYPEREMESIS GRAVIDARUM

OF cases of excessive vomiting in pregnancy only a proportion can fairly be classed as hyperemesis, and some strict clinical criterion would be a help in assessing changes in incidence and prognosis. Quoting the figures for the last seventeen years from the Royal Infirmary, Edinburgh, FAHMY[1] notes that in the first seven years there were 22 deaths in 206 cases, while in the last ten years there were 17 deaths in 603 cases, a fall in fatality from 10.6 to 2.8%. From these figures it seems that with readier admission of these cases to hospital severe hyperemesis is decreasing. FAHMY discounts an element of neurosis in the ætiology for the following reasons: most women desire their pregnancy, yet 40–50% suffer from some degree of vomiting; whereas many unwanted pregnancies are not associated with vomiting at all, nor is the condition relatively more common in pregnancy in unmarried women. Moreover, the average pregnant woman is not predisposed to neurosis, and in a considerable number of cases vomiting precedes certain knowledge of conception. Neurosis may exaggerate but cannot initiate the vomiting. Equally flimsy is the evidence for the toxic theory, since many of the toxic manifestations are the effect rather than the cause of as shown that much larger doses for 28 days had no ffect on the kind, incidence or duration of scarlatinal omplications Better results are obtained if the drug s used curatively at the onset of septic complications, nd toxic reactions are thereby greatly diminished ulphanilamide is recommended for meningococcal eningitis, whereas present practice here is to use, paricularly with severe infections, sulphathiazole or sulpharidine by mouth, or intravenously if the patient annot swallow Contrary to their statement, the oluble sodium salts of these drugs can safely be given ntravenously along with saline or glucose, although, ith the tendency to precipitate out, it is less safe to dd them to plasma or blood Sulphathiazole is recommended as the treatment of choice for lobar pneumonia ; hemotherapy is much less effective in secondary bronchopneumonia Specific antipneumococcal serum is recommended as additional treatment only in certain special circumstances—a remarkable volte face in America Surprisingly, scarlatinal antitoxin is to be given in septic scarlet fever, although American clinicians claim much better results from immuno-transfusions in such cases Antitoxin is not mentioned in the treatment of staphylococcal infections Although serum is given pride of place as supporting treatment in the prevention and treatment of gas gangrene, the statement that sulphanilamide given prophylactically almost always eliminates the possibility of gas-bacillus infection is without any reliable clinical backing

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[1] Hardy, J. D., Wolff, H. G. and Goodell, H. *J. clin. Invest.* 1940, **19**, 649, see *Lancet*, 1940, **2**, 167.

[2] *J. clin. Invest.* January, 1941, p. 63.

[1] Fahmy, E. C. *Edinb. med. J.* 1940, **42**, 822.

These differences of viewpoint serve only to emphasise the wide field covered in this circular letter and to show the value of such practical advice as it contains A pamphlet on similar lines drawn up by, say, a committee of the fevers group of the Society of Medical Officers of Health and circulated to all infectious diseases hospitals would fill a widely felt need

PERITONEAL FLUID AS AN AID TO DIAGNOSIS

FACED with an acute abdomen, the surgeon of today is still without real help from any of the newer sciences and he must rely almost entirely on his clinical sense What may be called the laboratory lag makes the clinical pathologist inaccessible, and, even if the radiologist can sometimes help, the decision to act—be it in typhoid fever, appendicitis or in intestinal obstruction—must be an immediate one A method to make laboratory aid less tardy is proposed by Steinberg,[1] who has studied the pathological peritoneal fluids in over 150 cases of inflammation or irritation Much is already known from experiments about the cytological response of the peritoneum to bacterial and other irritants, but Steinberg is concerned with peritoneal exudates as a guide to the diagnosis and prognosis of intra-abdominal conditions Peritoneal fluids were removed by abdominal puncture, at operation or at autopsy shortly after death, and records were kept of the numbers and type of organisms and cells, of cell structure, of the number of leucocytes with ingested bacteria, and of the presence of extraneous substances in the fluids in different conditions and at various stages of their development Thus the fluid in early infections of the peritoneum shows about 8% of mesothelial cells, 90% of polymorphonuclears and 0–6 bacteria free in an average oil immersion field , while in late infections the exfoliated mesothelial cells may rise to 20%, intact polymorphs may be present only in moderate numbers, and the free bacteria may rise from 10 to uncountable numbers in a smear Whatever the value of such tables to the skilled interpreter it is better for most of us to place trust only in the grosser features which may make diagnosis certain The finding of a specific pathogen such as the pneumococcus in the fluid, the presence of numerous intestinal species of bacteria in appendical peritonitis, the mucinous material and fibre strands in peptic-ulcer perforation and the cholesterol crystals in bile peritonitis are of immediate help Steinberg suggests that the fluid may be obtained from the mid abdomen by puncture with an ordinary needle and syringe or by a special capillary pipette before operation or immediately the peritoneum is incised , and that microscopic examination of the fluid in stained smear and wet preparations should be made on the spot The occasions on which this sort of pathological support for the surgeon may be possible are not very numerous but there are times when abdominal puncture might certainly help—for example after operation when the decision is between distension caused by atony or by infection , or before operation when salpingitis, appendicitis or ectopic gestation may all be under consideration The dangers of the exploratory needle are probably not great, as those familiar with animal experiments know, and the operation has often been performed on children without unhappy complications One point emphasised by Steinberg is that the fluid must be withdrawn from the mid-abdomen but he has yet to show that the fluid from this area adequately represents or even indicates conditions in other parts of the peritoneal cavity

CALCIUM AND IRON

STEPS are being taken to make good any lack of calcium that there may be in our food by the enrichment of white flour with chalk, and there is ample evidence that calcium salts supplied in this way can be utilised by man Nutrition, however, is a complex matter, and one constituent of the diet cannot be altered without a risk of upsetting the utilisation of some if not all of the others Recent work by Kletzien[1] and Tompsett[2] has indicated that the addition of large amounts of calcium-containing substances to the food of mice and rats interferes with the absorption of iron and reduces the iron stores of the body This observation is interesting from two points of view In the first place it throws some light on the complex factors regulating mineral metabolism Tompsett suggests that calcium acting in the intestine as a base lowers the acidity of the intestinal contents and as a result lessens the solubility of iron salts and the proportion present in the divalent or ferrous state It is held by some workers that the reaction of the intestinal contents plays a leading part in regulating the amount of mineral absorbed At the same time it must be remembered that patients with achlorhydria do not necessarily suffer from anæmia Hutchison,[3] indeed, has shown that the actual absorption of iron in an achlorhydric subject was not impaired The retention of calcium itself does not appear to be significantly affected by the administration of a diet rich in alkali[4] The question arises whether calcium exerts a specific action on absorption apart from its tendency to produce an alkaline reaction in the upper intestine Certainly a high calcium diet greatly reduces the absorption of lead The possibility that lime salts in large amount affect the secretory or absorptive powers of the intestinal epithelium should not be entirely disregarded, for in addition to its actions as a bone builder and regulator of neuromuscular excitability calcium seems to play an important part in controlling the distribution of water between cells and tissue fluids Of more immediate importance is the question whether the addition of chalk to our bread will have a deleterious effect on the synthesis of hæmoglobin by limiting the absorption of iron It would be a national disservice to exaggerate the possible dangers of this dietetic adjustment, and as has been pointed out in *Nature*[5] the maximal increase

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[1] Steinberg, B *J Amer med Ass* Feb 15, 1941, p 572

[1] Kletzien S W *J Nutrit* 1940 19, 187

[2] Tompsett, S L *Biochem J* 1940 34, 961

[3] Hutchison J H *Arch Dis Child* 1937 12 305

[4] Farquharson R. F Salter, W T , Tibbetts, D M and Aub, J C *J clin Invest* 1931, 10, 221

[5] Feb 22, 1941, p 225

387 consecutive outpatients at the Children's Hospital, Boston, none of whom had been brought to hospital because of a primary complaint of threadworms An arbitrary list of eleven of the signs and symptoms most often ascribed to threadworm infection was selected for study These fell into three groups First came gastro-intestinal symptoms, including nausea and vomiting, vague intestinal pain, diarrhœa, loss of weight and loss of appetite Next came certain local, perinæal symptoms —anal pruritus, anal skin lesions, and vaginitis and vulvitis Finally there were three nervous symptoms—night restlessness, enuresis and masturbation Each of the children was subjected to a special examination by the "N I H swab," an anal swab consisting of a portion of Cellophane folded on a small glass rod and widely used for the accurate determination of threadworm infection in the United States A group of 118 inpatient children were also examined by the anal swab Of the 505 children, 97 (19%) were found to have threadworms, more girls being infected than boys Of the outpatient group, in whom the special study of symptomatology was made, 72 (19%) had threadworms and 315 (81%) were free It was found by comparing these two groups that children with threadworms complained of gastro-intestinal symptoms no more often than the uninfected children, with the exception of a slightly greater percentage showing loss of appetite—a finding at variance with the popular idea that "worms" produce an abnormally large appetite The incidence of vulvitis and nocturnal restlessness was the same in both groups of children The remaining symptoms—anal pruritus, anal skin lesions, enuresis and masturbation—were slightly commoner in the positive group but in no case was the variation statistically significant This study does not, of course, give a fair picture of the symptomatology of threadworm infection since it deliberately excludes children who were known to have worms in the stools But it does reveal the relatively frequent occurrence of latent or what may be termed "subclinical" infection Of the 72 positive swab children 64% had no gastro-intestinal symptoms, 80% had no perinæal symptoms and 58% had no nervous symptoms Actually 36% had none of the eleven symptoms chosen for inquiry These findings must not be interpreted as meaning that threadworm infection causes no symptoms, but in the past the symptoms attributed to threadworms have been so vague that they could probably be elicited from a large proportion of the normal population More study is needed to tell us why some patients have symptoms and some not Meanwhile it is a disquieting thought that nearly 1 in 5 of the white children attending the Boston Children's Hospital are harbouring these worms without their parents' knowledge

THE SIGNIFICANCE OF CERVICAL METAPLASIA

THE very early diagnosis of cervical cancer offers a problem which has often perplexed the pathologist and confounded the surgeon At one time it was not uncommon to regard the cervix as precancerous, or in an early stage of actual cancer, if it was the seat of epithelial metaplasia, but experience of the action of gonadal hormones on the uterus and vagina in animals has changed our opinions Carmichael and Jeaffreson [1] point out that in the cervix of the healthy nulliparous woman the stratified epithelium of the vagina abruptly gives place at the margin of the external os uteri to the columnar celled lining of the cervical canal, and there is no intermingling of one type of epithelium with the other Often, however, a stratified, non secreting epithelium, sometimes surmounted by mucus containing cells, is found within the cervical canal, it may be in isolated patches and occasionally extends deeply into the cervical glands, thus in some degree simulating early cancer Carmichael and Jeaffreson have studied the condition by a histological survey of 400 human cervices They find no evidence to support the old contention that the stratified epithelium has spread by a direct ingrowth from the vaginal face of the cervix, its presence in the cervical canal is in fact the result of a local metaplasia Among the cases which provided the material for their paper endocervical metaplasia was present in 35% of women under fifty and in 50% of those over fifty, otherwise the influence of age was slight No evidence was found suggesting that inflammation plays an important part in causing the lesions, nor that the changes are precancerous They suggest that the condition may be induced by sex hormones acting in conjunction with local causes Such a view is in accord with experimental results obtained with sex hormones in animals, these have shown that œstrogens cause stratification of the vaginal epithelium, and—if given in sufficient quantity—of the cervical endothelium too Susceptibility to this reaction is innate in the cells, and is graded in degree so that an amount of hormone enough to cause stratification in the vagina will not necessarily cause a like change in the cervical epithelium, though larger doses, if given long enough, will have this effect The boundaries of these gradients of susceptibility are not always precise, large doses of an œstrogen may provoke reactions which are not always well defined anatomically or evenly distributed Moreover, some hormones reinforce each other and others are antagonistic so that a given lesion cannot be attributed to a deficiency or excess of any particular hormone until the quantities of other effective hormones present at the same time have been estimated Finally, in the spayed rat mere irritation of the vagina, as caused, for example, by daily scraping, favours the appearance of epithelial stratification With such an experimental background the observations and microphotographs of Carmichael and Jeaffreson seem to agree

CHEMOTHERAPY IN AMERICA

THE American National Research Council evidently takes a realistic view of its functions Two of its committees—one on chemotherapeutic and other agents (chairman, Perrin H Long) and the other on infectious diseases (chairman, Francis G Blake)—have jointly issued a circular letter [1] on chemotherapy for infectious diseases and other infections Although they admit that it is impracticable, except in a broad way, to delineate therapy for persons suffering from various infections, they give specific advice about choice and dosage of sulphonamide drug and the indications for the use of specific antisera in the following diseases hæmolytic streptococcal infections (tonsillitis, otitis media, cellulitis, erysipelas, septicæmia, &c), scarlet fever and its complications, meningococcal and other purulent forms of meningitis, primary and secondary pneumonia, gas-bacillus infections and staphylococcal infections The various toxic manifestations from the three commonly used drugs—sulphanilamide, sulphapyridine and sulphathiazole—are listed and advice given about their prevention and treatment Not all the recommendations about use and dosage of drug would find general acceptance here For example, despite the risk of relapse, it is not customary to continue dosage in streptococcal or meningococcal infections at the rate of 6 g daily for 5–7 days after the temperature has subsided, as advised in this letter On the other hand, no instructions are given to the practitioner about when to stop the drug in cases which do not respond Opinion here is divided about the value of sulphanilamide in tonsillitis, and its use, as recommended, in 0 5 g doses four times daily for the period of isolation to prevent the septic complications of scarlet fever is not likely to be beneficial in fever hospital practice, where French [2]

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[1] Carmichael, R and Jeaffreson, B L *J Path Bact* March, 1941, p. 173

[1] Circular Letter No 81 *J Amer med Ass* Feb 8, 1941, p 513

[2] French, J O *J Hyg, Camb* 1939, 39, 581

Special Articles

STUDENTS IN CONFERENCE

Last year some six hundred students attended the meeting of the National Union of Students at Leeds, this year a thousand were expected at Cambridge and over eleven hundred arrived Many of them, using well the opportunity of war, came as hitch-hikers on cars and lorries, on April 1 they were converging on Cambridge through the rain some as hooded figures with mackintoshes and stout shoes, rucksacks on back, and some from farther afield wearing the kilt and the skiandhu Of this company two or three hundred were medical students members of the British Medical Students' Association, the northern universities were well represented in this group but members from the south were relatively scanty those from the London medical schools being disappointingly few, though the London School of Medicine made a good showing and contributed to the executive staff Students always make an impressive audience to their elders because they show that altruism which later experiences seldom leave undulled They have the generosity which might build a new world, if the world into which they are about to step was not geared to destroy that very quality This may account for the impatience with which one or two of their lecturers summed up at the end of discussions it is never very comfortable to meet one's former ideals face to face after twenty years of compromise The students were idealistic, yes, impractical, yes—even at times woolly But they have it seems, a keen social conscience, an anxiety to learn preventive medicine, to change those industrial conditions now injuring the health of their fellows and to turn medicine from a routine of patching up to something more constructive And this great head of energy, this weight of goodwill, is only ineffective because we have arranged our society in such a way that it is not harnessed The students are eager enough to put it into commission, nothing showed this more than their attention to Dr H G Stead, director of education at Chesterfield Technical College, Sheffield and the way in which they quoted him in the sessions that followed The idea which had caught them was one he introduced in speaking of the escapist device of responding "in the future" to a challenge which is immediate—the belief, for example that by doing something to improve the education of school-children we were relieved the responsibility of doing something constructive ourselves He suggested a concrete plan by which students might make a contribution now to the study of their times, approaching it by way of discussion of the public schools, these, he said, were established to train people for leadership at a time when political power was in the hands of the few and the main economic was agriculture Was their function still *desirable ?* Yes, in his view. But power had moved into more hands and the main economic was now industry. Only by drawing pupils from the whole people and by changes in the curriculum to meet the new economic could the public schools continue to fulfil the function for which they were set up He suggested that students might form small groups to study the curriculum of any school they knew, and to find out how that curriculum came into being, what purpose it fulfilled then, whether that purpose was still valuable and if so what changes were needed to make the curriculum fulfil the same function today.

THE CURRICULUM

Perhaps in no form of education is research so much needed as in the curriculum of the medical student Prof F. Wood Jones, who addressed the B M S A on the present position of medical teaching, gave his audience some excellent starting points for investigations of the kind In the days of the private medical schools, he said, students had to know enough botany to spot plants used in the British Pharmacopœia a smattering of zoology relating to the animals whose products appeared in the same work, and the chemistry of the drugs they used Their study of anatomy was nearly as full as it is today, but their physiology course was trivial When Huxley laid down the modern university curriculum in London scientists believed in uniserial evolution; as a result, the curriculum was loaded with all sorts of plants and pollywogs which were dead ends of evolution and threw no light on human structure It was topsy-turvy, indeed, to dissect a rabbit in preparation for the study of man man was the simplest mammalian type, it would be logical to give the zoologist about to study mammals a man to dissect before he passed on to more highly modified creatures Professor Wood Jones suggested that the first-year course might be replaced by what Americans called an orientation course—a general course in biology This should be given by the best and most mature teacher, his business being to provide an introduction to the study of life for the man who was going to deal with living organisms In the teaching of anatomy and physiology the study of structure must be related again to that of function The spinal tracts and the neuromuscular mechanism for example, must be taught together At present two bogies hanging over the internal teacher were the General Medical Council and the external examiner The G M C laid down the curriculum, but the students must somehow get a say in choosing that curriculum They were all registered with the G M.C ; students in Australia had felt that they were not getting much return for registration, and nowadays no-one in Australia registered

These stirring words on the curriculum provoked a flood of corroborative reminiscence from his hearers At one university, it seems, psychology is taught in a course of six lectures, delivered by a teacher who is not a psychologist One speaker began his address with the uncompromising statement "In —— our greatest curse is bad teachers" He said that of ten lectures a week (compulsorily attended two weeks out of three) it was agreed among the students that four were worth going to, and six were valueless He pleaded for a voluntary lecture system, teachers who were poorly attended might then improve their technique A Scottish speaker made a sound point when he said that in general practice minor gynæcological ailments were common, yet on gynæcology his university offered only ten lectures and ten theatres in the whole medical course Students, however, did clinical surgery for four terms and attended fifty lectures on operative surgery, how often would that stand the general practitioner in good stead ? Many appealed for a course which would bear more relation to the needs of general practice for a chance to see common and trivial ailments and—again and again—for better grounding in preventive medicine One pointed out that in spite of the lengthening course in chemistry they were taught nothing about industrial poisons At one medical school the students' union had studied their own criticisms of the curriculum and had finally put recommendations before the staff committee These had been considered and many of them had been accepted Some of the set lectures had been replaced by seminar classes attended by not more than fifteen people, and the casualty and gynæcology courses had been improved All favoured teaching on discussional lines, though there is always a danger that the dullards will hold up progress in a small class This, however, applies equally to the system of set lectures, as one speaker pointed out, one of his lecturers, he said, read his notes through at dictation speed—and there were students who liked it In his own view, lectures should be an aperitif, whetting the appetite for reading

TEACHERS AND TAUGHT

There are evidently students and students and it is in the nature of meetings of this kind that the best and keenest should attend. Prof G I Boyd at a later session, responding to a speaker who appealed for a wider educational grounding in philosophy and literature, said he often found students impatient of the cultural aspects of even their own studies In part this is no doubt due to the haphazard manner in which medical students are at present selected, the training is only within reach of those who can afford it and few of them have a vocation Professor Boyd found that the 10–15% of dullards could bring down the standard of the whole year, and mentioned with respect the motto of that Spanish university, which runs. "What nature has denied Salamanca cannot supply" He thought students might in lime produced by the addition of calcium to white flour is very much less than that used by Kletzien and Tompsett in their experiments There was an old view that excessive consumption of milk leads to anæmia, and if milk is taken to the exclusion of other foods this may well be true, not because of the high calcium content of milk but because of its very meagre content of iron The same may apply to the abnormal diets forced on us in war-time It will be wise, therefore, for the family doctor to make increasing use of his hæmoglobinometer just now, especially with expectant mothers and children, in whom the chances of iron deficiency are greatest

AUTOPSIES IN RURAL PRACTICE

HIMSELF a country practitioner, Dr W F Putnam[1] pleads for the routine performance of post mortem examinations in country practice and has contrived to get permission for, and to carry out, autopsies on 34 of the 64 of his patients who died in the years 1936–39 In most cases his clinical and pathological findings tallied tolerably well, though a clinical diagnosis of "stillbirth" is not greatly amplified by a pathological diagnosis of "stillbirth", autopsies ought to take us further than this *It is easy to be wise afterwards but it may be* wondered why some at least of the conditions first discovered at autopsy were not suspected before death It seems incredible, for example, that peritonitis due to a ruptured gall bladder should have been completely silent Nor should a thrombophlebitis have been missed, whereas a thoracic aneurysm might surely have been suspected and subsequently confirmed radiologically In so far as he wants us to perform autopsies to attain greater knowledge and accuracy Putnam carries us all with him It is only when he argues that, without the salutary cold douche of post-mortem evidence, country doctors are apt to become complacent and unconscious of their errors and limitations that some will want to join issue with him In this country the standard of country practice is at least as high as, if not higher than, that of towns and few if any rural patients die undiagnosed for lack of necessary special investigation One of the reasons why Putnam wants country doctors to carry out autopsies is to improve the standard of rural practice and so "eliminate the bogy of state medicine" It is difficult to follow his reasoning here A superstition widely held among those practising in towns is that country doctors enjoy a life of arcadian leisure whereas in fact one of the many difficulties of autopsy in country practice is to find the time and the place and the cadaver all together Post mortem examinations conducted on a trestle table in a freezing outhouse with a bucket of cold water as the sole amenity and the local Dogberry as assistant are toughening experiences which, though better than nothing, are not conducive to good and accurate work, where a post-mortem room, with a skilled pathologist hovering in the background is at hand, it is another pair of shoes Might not Putnam's dreaded bogy provide us with these ?

BURNS OF THE EYELIDS

How far coagulants must be held responsible for contractions following burns of the face or hands is still undecided, but the burns team of the M R C war-wounds committee have left no doubt of their own opinion, by their recommendation that no coagulant of any kind should be used on the face, hands and wrist, or feet[2] The voice of eye surgeons has been little heard in the discussions on this question, but certainly some of them maintain that eyes have been lost with tannic acid which might have been saved with other treatment In their view coagulants applied to the lids render them rigid, immobile and contracted, their protective function to the eye is lost, the cornea dries and ulcerates from exposure, and perforation and panophthalmitis will ultimately destroy the eye *Whatever his personal opinions,* no surgeon is likely to feel certain enough of them to ignore this warning, so that for the rest of the war coagulants are likely to be discarded in the treatment of burns involving the eyelids Careful diagnosis of the depth and extent of such burns is essential First degree burns merely require cleansing with saline or sodium bicarbonate, the application of saline packs and observation Those of second degree should be treated in the same way, with careful excision of all tags of dead epithelium and vesicles During observation it may become evident that some areas are in fact third degree In most burns of the eyelids the lid margins remain intact This is of great advantage in that it allows tarsorrhaphy to be performed, a procedure of vital importance for the *protection of the cornea and the prevention of ectropion* during healing or after the application of a Thiersch graft In third degree burns cleansing, excision of all devitalised tissue and tarsorrhaphy are followed by the application of a Thiersch or Wolfe graft, held securely in place by suturing the edges of the graft to adjacent skin and covering this with tulle gras and a piece of stent moulded to shape and held in position by sutures

ANÆSTHESIA FOR CHEST SURGERY

THE development of anæsthetic methods and technique to meet the full needs of the surgeon carrying out severe chest operations was discussed on April 4 by Dr M D Nosworthy at the section of anæsthetics of the Royal Society of Medicine He warmly advocated "controlled respiration," that system by which natural respiratory movement is suspended and the respiratory exchange is effected by rhythmic pressure on the breathing bag The advantage to the surgeon working within the chest of having the cavity free from movement needs no emphasis, and a safe technique to provide this may be acquired by experience Controlled respiration is obtained either by lowering the carbon dioxide tension or by heavy depression of the respiratory centre by drugs, to obtain it Dr Nosworthy uses cyclopropane at a percentage strength much above that considered safe in ordinary surgery He does not consider the use of Avertin or paraldehyde permissible to repress respiration because they abolish the cough reflex for too long For empyema and lung abscess local anæsthesia was recommended Cough must be prevented, because it disseminates infection, for this purpose either the infected zone of the lung must be shut off from the healthy parts or else suction must be used effectively Dr Nosworthy believes that the surgeon is well advised to forgo the advantage he might sometimes gain from the use of diathermy for the sake of using an anæsthetic whose inflammability must not be forgotten In civil life the subjects of severe chest surgery have generally suffered long-standing illness, often complicated by amyloid disease, and every possible step has to be taken to maintain circulatory and respiratory efficiency at the best possible level during operation In military chest surgery the position is different, the patient being, apart from his chest injury, a first class subject Dr C Langton Hewer considered the post operative fall in blood-pressure after cyclopropane to be due to the disturbance of metabolism produced by a sudden return from an atmosphere containing excessive oxygen

SIR COMYNS BERKELEY has been re elected chairman of the Central Midwives Board for the year ending March 31, 1942

In a circular (No 2323) addressed to local authorities and hospital boards the Minister of Health recognises the serious effect on private practice of the recruitment of practitioners of military age and suggests ways of allocating medical man power between the civilian and military services doubtful luxury of a paid companion There is a real need for superior almshouses especially for superannuated gentlefolk where for a reasonable payment they could have at least a bed-sitting room with the use of a communal dining-room recreation-room and garden with a resident nurse to attend to their minor ailments In such places they could husband out life's taper without the haunting fear of what is to happen to them if they should fall ill If I were a rich man it should be the first of my war-aims to build such refuges , it would be as “practical and limited ’ as the peripatetist's war-aim of a fixed retiring age, and is a necessary corollary to it

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[1] *New Engl J Med* Feb 20 1941 p 324
[2] See *Lancet*, March 29, 1941, p 426

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It has always been my lot to be associated in some way or other with zoological gardens no matter where I have been domiciled and people often ask me if I approve of keeping wild animals in captivity for public exhibition. At one time I was content with the answer that if scientific knowledge is gained in this way the business is quite legitimate but I have learned slowly that in the average zoo little scientific observation is carried out on the habits or life-histories of the inmates ; and that such as is done is so uncontrolled and uncoördinated as to render it almost useless I have sadly realised that little is added to real knowledge by the keeping in captivity of beautiful wild creatures and that many zoos are doing little better than providing wild beast shows for the entertainment of a public that should demand a more æsthetic introduction to nature In addition there comes the question of cruelty involved even in a wild beast show I have grown accustomed to a philosophy that for the powerful roaming animal captivity is undoubtedly irksome, unless the animal is bred of a long series of captive ancestors that has never known the wild I have a fancy that this thesis is defensible, despite the restless hunting urge that manifests itself even in the menagerie-bred carnivores But I have always thought I was on safe grounds in urging that for the many frightened little animals whose lives were ruled by dread and apprehension in the wild, the assurance of complete and assured safety compensated for the loss of liberty when in captivity This also I believe to be a thesis capable of common demonstration The assurance of food, of safety of shelter and of permanent residence under conditions as nearly ideal as human ingenuity can devise is a great compensation to a little timid, hunted animal whose wild life is spent in fear and apprehension.

In teaching students anything concerning the zoological position and the racial differentiation of man it has always been my aim to insist that civilised man is and has long been a domesticated animal Moreover, a large section of mankind is not only domesticated for the worker must also be regarded as an animal living in captivity Now to consider man as a domesticated animal is a helpful scientific concept, as anyone who has considered human racial differentiation in the light of Darwin's “Variation of Animals and Plants under Domestication” of 1868 must agree But to consider man as a captive animal is a more complex problem since it entails some knowledge of the social system under which he is held captive. If we accept the basal thesis that man, as a member of the primates, is a frightened animal in the wild we must face the question . “Has captivity diminished his fears ?” There is plenty of evidence on which such a question can be debated Natural wild living free man has his fears In certain places he fears wild beasts he fears the failure of his hunting he fears droughts and calamities of nature He fears the hostility of neighbouring tribes. But his fears are transitory They remain to be faced but their conquest is likely to create a return to the normal routine of life What of captive man ? His fear once he has taken upon himself the responsibility of the normal state of manhood, is fixed indelibly on him. His life is ruled by fear Fear of failure in his work. Fear of illness Fear of incapacitation. Fear lest those dependent on him are deprived of even the necessities of life while he is unable to earn a wage Under the system prevailing in our so-called civilised and Christian countries fear is the dominant note in the lives of all those men captive owing to our present social regime. It should not be beyond the imagination of the ordinary man to picture a state of affairs in which this ever-present and terrible load of fear is lifted in which the illness or incapacitation of the wage earner did not spell ruin to the family, in which man necessarily a captive in a world economic system yet had the protection the security and the assurance afforded to a timorous rodent in a zoological gardens It seems no very idealistic plea that man captive though he may be as a domesticated animal should yet have meted out to him the assurance that anxiety fear, dread of enemies and of shortage of food should be eliminated from his life as it is, for instance, in the life of a captive hamster There is surely an economic social regime that could accomplish this

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Almost every practice has at least one Great Professional Sufferer whose agonies and tribulations surpass any previously recorded (‘Nobody can realise a thousandth part of what I endure) but whose heroic fortitude in spite of being misunderstood, in spite of lack of sympathy, snatches them time and again volubly from the grave (“My doctor says it is only my wonderful spirit that keeps me alive ’) Such a one was the writer of France Pastorelli's ‘ The Glorious Bondage of Illness ” (Allen and Unwin 2s 6d) She was a musician who is said to have developed an incurable form of heart disease, and to have been in bed for four years If the book goes to another edition—and I hope after all the lady will live to a ripe old age—a few clinical notes and an electrocardiogram would add interest for the medical reader I confess after reading the book I have not diagnosed the cardiac complaint.

There are two classes of great professional sufferer There is the humbug class who are G P.S.s because it pays them to be , it is the only way they can dominate their families or be important, or it is the most comfortable way of living I remember seeing about twenty of this last sort all together : it was not in this country, they were all soldiers alleged to have contracted tuberculosis in the Great War. Each had a chalet, was well fed and looked after, and enjoyed heroic status though few had heard a shot fired They had been there for ten years when I saw them and probably are there still Any suggestion that tuberculosis was a curable disease and of getting a move on was regarded as an *insult*, a brutal attempt to stop a comfortable career The other class is far more interesting , they are among those patients whom Nature wants to lie still *and so she has* given them a marvellous power of dramatising themselves and their surroundings A year ago I had a patient who lay like a log for three days with influenza. I asked him what he had been thinking about. He had imagined he was covered with invisible paint, and after various adventures in this country including an invisible interview with the P M he had gone into Germany and done some gloriously horrible things It was like a thrilling film and he was acting the principal part “Did you kill Hitler ? ” I asked “No I slipped into his bedroom and came over and stood by the side of his bed with my knife all covered with invisible paint, of course ready in my hand, I saw the vessels in his neck beating then he turned and looked at me, and with his moustache lying down and without his false teeth he looked so pathetic . ” Anyway *that fantasy* kept this young man quiet and amused for three days Some of Henley's manly verse and Stevenson's adventures are of this origin, healthy songs and stories *that Nature made them* tell themselves, which only incidentally came afterwards to us The first object of Keats's poetry was to keep him and his flaming lung quiet What a potent force this is which could make him see his crystal dreams sublime in an apothecary's shop or can for a little while at any rate transport every ailing exile home.

The second class of G.P.S s consist I think, of patients in whom this process is at work, but who haven't the imagination the visual imagery, to build a complete fantasy, and thus spoil it by mingling it with truth the sordid truth of illness and the sick room Madame *Pastorelli* probably belongs here and within these severe limitations she has written a book with some artistry. A healthy person's reaction to reading it will be impatience with the author and her “many Gethsemanes ’ , on no account should these chapters be put into the hands of a sick person, for, as the American girl said of the Ten Commandments, they just put nasty ideas in one's head well begin with a year of general training in sociology and philosophy, and take courses in nursing, industrial medicine and the relations of doctor and patient late in their course. He suggested, too, that they should have a year of "doing something else" between leaving school and going to the university. One of his realistic hearers agreed that we must improve the material entering medicine, but pointed out that we must also do the best we can with the material we have got. Back came the discussion, hammering away at the curriculum with warmth and good sense. Some were for appointing only trained teachers to teach, deprecating a system which compelled those whose hearts were in research to ladle out elementary knowledge; but some foresaw danger in such a change. Then indeed they might only be taught from potted textbooks, whereas the researcher, however dull his lectures, was established on the growing point of his own subject. As one speaker put it, the good researcher cannot talk badly about his work. It was agreed again that lectures should be fewer and more stimulating, demonstrations direct, and discussion between student and teacher free. Many deplored the gulf separating them from their teachers—even a literal gulf, at one university, where the teachers hurry home across a river, left nameless by the discretion of the speaker. For a few schools the war has helped to bridge the gulf. One of the evacuated London schools is housed in a country manor house, men, women and teachers together; a resident gave a thumbnail sketch of their communal life in which the men chop wood and clean bicycles, the women darn socks, and the teachers behave as men and brothers. One excellent suggestion was made for bridging the gap: that students and teachers should join in group research. This, perhaps, of the many changes suggested is the one which could be put most promptly in commission and which would be most likely to bring a good revolution in its train.

MEDICINE AND THE LAW

Damages against Chiropodist

A CHIROPODIST was ordered to pay £62 15*s* damages at Barnstaple county court last month on a claim alleging want of skill in treatment of the plaintiff's foot. Mrs. Colston, the plaintiff, said she had visited him for treatment for corns; but he had taken her foot in both hands and violently twisted and jerked it so that she suffered pain and was unable to walk as well as before. Mr. F. J. Frape, the defendant, said he was a fellow of the Council of Chiropodists and practised as a chiropodist and specialist in fitting shoes. He denied using force or causing pain; if Mrs. Colston had pain when she left his premises, she had pain when she came to him.

The county-court judge was assisted by the report of Mr. N. Capener, orthopædic surgeon of Exeter, upon the X-ray photographs which had been submitted during the trial. He asked Mr. Frape what was the explanation of the change indicated in the condition of the foot. The defendant replied that he could not say; his working upon the foot might have "upset a little stagnation." The judge held that Mrs. Colston had submitted to the treatment voluntarily, with the knowledge that Mr. Frape was a chiropodist and not a surgeon. Mr. Frape, he said, was a professional man of considerable skill who had done good work. He had advised Mrs. Colston that the toes required treatment and she had gone back to him for this purpose. But Mr. Frape had either been wrong in his diagnosis or in the action taken to remedy the trouble diagnosed; "if he did not know, he ought to have advised Mrs. Colston to see a doctor." The judge observed that he did not hold the chiropodist liable for the primary injury but for the advice he gave. Mrs. Colston was entitled to some damages. The judge limited the damages to those for the injury caused by the wrong treatment after the trouble arose; he awarded nothing for any unfortunate treatment which preceded it. And so, we see, a patient has herself to thank if she consults a chiropodist instead of an orthopædic surgeon; on the other hand the chiropodist is in no way prevented by law from practising manipulative surgery, but, if he ventures outside the field of the chiropodist in which he is highly skilled and experienced, he does so at some risk to himself as well as to the patient.

In England Now

A Running Commentary by Peripatetic Correspondents

A PERIPATETIC correspondent recently raised again the old question of crabbed age versus youth. From the internal evidence he was a young man with more than a touch of the arrogance and pitilessness of youth, but he will find in due time that age brings with it enough of disappointments, sorrows and disabilities, without adding to them the feeling that one is despised by one's juniors who are only waiting with impatience to step into one's shoes or to shovel one into the grave. The familiar jibe has again brought out that old men make wars whilst young men fight them, which means presumably that the men who survived the last war made this one and that most fathers do not mind the risk of their sons being killed, and which in any case is an absurdity in a country which chooses its rulers by universal suffrage. We were also of course reminded of Osler's dictum that a man is too old at 60 (or even 40), a rash statement which he regretted afterwards and which he refuted in his own person by living in full activity to the age of 70. Would it have been better for medicine if he had crept into his shell 10 years earlier? The fact, surely, is that the supposed antagonism between age and youth—like the alleged class-war or sex-war—is largely imaginary, for each period of life has its own special qualities: youth, energy and initiative; age, wisdom and experience. Edmund Waller took a kindlier and truer view when he wrote:

> The soul's dark cottage batter'd and decay'd
> Lets in new light through chinks that time hath made.
> Stronger by weakness, wiser men become
> As they draw near to their Eternal home.

The correspondent, I remember, then went on to advocate that most men should retire at 60, but prime ministers were to be allowed to go on to 65—a liberal concession which would have lost the country the present services of Mr. Churchill. There are two main reasons, however, which prevent men from retiring from work: one is that they can't afford to, and the other—and often the more potent—is the fear of boredom and of the general deterioration, physical and mental, which so often follows upon retirement; a mere limpet-like tenacity in clinging to office for its own sake is not common. It is of course right and only just to the juniors that a man should not stay on the staff of a hospital or in a teaching post too long, but a service limit is probably fairer all round than an age-limit. Under any system, however, it is inevitable that some members of the staff will be lost to the hospital while still at the height of their powers and others will stay on for years who had better have disappeared earlier.

* * *

For their increase in longevity the old are not to blame (unless they are all expected to commit suicide about the age of 70); it is largely the work of our profession and we must face its physical, just as governments will have to face its economic, consequences. Since the beginning of this century preventive medicine has been mainly occupied with the welfare of children and it is time that the old had their turn. We must supplement pædiatrics with geriatrics, a science of the diseases of age, and child psychology with senile psychology. It is astonishing how little most of us know of the peculiarities exhibited by disease in old people and of the best way of alleviating their many minor disabilities, and those who have the opportunity of acquiring such knowledge in institutions and hospitals for the chronically sick do not seem to pass their experience on to the profession at large.

Many old folk in all classes of life have, as every doctor knows, great difficulty in even keeping together a home in which they can die comfortably. In the days of large families there was usually an unmarried daughter who looked after the aged parents and this, though often hard on the daughter, at least enabled them to keep a home. But now the daughters are either married or have jobs of their own while the parents are too unselfish to keep them tied, and hence the number of unhappy and often querulous old people to be found in boarding-houses and private hotels, for many of them cannot afford the

1 Incision lateral, avoiding injury to vessels and nerves

2 Full exposure of both proximal and distal cut ends

3 The use of braided silk no 5 or 7 attached to a straight or rved needle of the "intestinal" type The suturing is ne very carefully so that there is no increase of diameter the site of suture, and the tied ends are buried between e cut ends of the tendon

4 At one time I tried to restore both the tendons and the eath, but it was obvious that the profundus and sublimis ndons fit so tightly within the sheath that a trivial adhesion sufficient to prevent function In recent years I have erefore departed from this in two particulars

(a) The sublimis tendon is removed for some distance oximal to the site of injury, retaining however the split rtion which gives passage to the profundus

(b) The sheath itself, all except the floor, is excised both ove and below the site of injury, with of course the proviso at the "pulleys" are not interfered with

Active movements are started immediately and, possible, maintained Sometimes however tissue action gives the impression that the above procedure a failure, but I find that if the patient returns to work r some weeks there is a gradual increase in elasticity nd coincident with this an increase in function If fter this waiting period there is little or no movement, en the finger is opened up again and adhesions severed, nd if scar tissue is too evident this is dissected out and e tendon itself covered with a paratenon graft from ver the triceps at the elbow

St. Helens, Lancs R M JONES

HE NEUROLOGICAL APPROACH TO MENTAL DISORDER

SIR,—It was a pity that Group Captain Symonds, in is presidential address to the psychiatric section of the oyal Society of Medicine, did not keep rigidly to his hosen title Difficult as was the task which he had thus et himself, he might nevertheless be sincerely congratuated on the skill with which he had marshalled facts, xperiments and theories in neurology which could have ny conceivable bearing on the problem But, unforunately for the complete success of his address, this did ot content him and he passed beyond his own specialty o a consideration and criticism of another science—iz , psychology—in which his knowledge and insight ere not up to the same standard Indeed he seems uite unaware of what modern psychology is, or of the xtent of its contributions to modern medicine, of a trictly scientific and verifiable nature The whole field f mental testing, the numerous psychological investiations into the building up of conditioned reflexes of very kind in the mental sphere, including the new inight reached thereby into the nature of suggestion and uggestibility and of the formation (as contrasted with he radical causation and meaning) of many neurotic ymptoms, and—at the other end of the scale—the facts nd theories of character types and the more philoophical problems of knowledge and will, are all of the utmost importance for modern neurological and psychiatrical theory but receive no consideration from him On the other hand he makes dogmatic statements about psychotherapy—i e , psychology as applied to the problems of medical treatment—which will be unhesitatingly rejected by every trained psychologist who has a medical qualification Psychology is becoming an ever more important and indispensable subject in the medical curriculum, with lessons for the general practitioner and for the specialist in every field, but in difficult cases there will always be a demand for highly specialised psychological treatment and highly trained psychotherapists

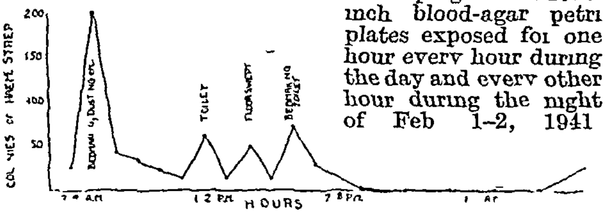
Oxford WILLIAM BROWN

SIR,—To an outsider it seems a pity, especially at the present time, that so much valuable space should be allotted to the disagreements of neurologists and psychoanalysts Further, it seems illogical that psychoanalysts, whose branch of psychology derives more than any other from neurology and neuropathology, should have chosen the rôle which they are playing Surely all but ultra-vitalists regard the nervous system as the *physical basis* of psychology, however inexplicable with our present knowledge the relationship may be Yet no neurologists can be so foolish as to underestimate the value of the contributions of pure psychologists, most of whom have had little or no training in neurology Just as astronomy made vast strides before Newton discovered the law of gravitation, so every branch of psychology elicited verifiable facts of theoretical and utilitarian value in spite of ignorance of neurology *At no time has psychology been so important to humanity* as now, and it behoves each branch to contribute its quotum of positive value, and so far as possible to coordinate the results Cannot the more moderate neurologists and psycho-analysts get together and segregate their points of agreement, leaving the more intransigent to plough their lonely furrows and prove their worth by the crops which they produce ?

Leeds J HERBERT PARSONS

INFECTED DUST

SIR,—The accompanying chart shows more graphically than words or figures can the effect of disturbing the dust in a single-bedded cell housing a boy convalescent from scarlet fever The chart was prepared from counts of the total number of colonies of hæmolytic streptococci developing on two four-inch blood-agar petri plates exposed for one hour every hour during the day and every other hour during the night of Feb 1–2, 1941



This boy was infected with a type-2 streptococcus on admission but a week later nose and throat swabs gave cultures of a type-3 streptococcus It was found on inquiry that in a cell on the opposite side of the corridor which separates two rows of cells was a patient—the only one—with a type-3 streptococcal throat infection The dust of her cubicle also contained the type-3 streptococcus, and further investigation indicated that this streptococcus gained access to the boy's respiratory tract by transfer and inhalation of the infected dust from the opposite cell Henceforth the boy's nose and throat cultures yielded streptococci of both types 2 and 3, while type 2 was usually more scantily represented than type 3 among colonies picked from "exposed" plates or cultured dust

ROBERT CRUICKSHANK

L C C Group Laboratory, N W 3

FEEDING OF THE YOUNG

SIR,—I was most interested to see Professor Mottram's letter, written at a time when the problem of providing adequate first-class protein in the child's diet assumes even greater importance, and I should like to take this opportunity of voicing again my own fears and alarms Professor Mottram has given a figure of 30 g of first-class protein a day for the child of 9–10 years, and has shown that under present conditions the child of the middle class will barely achieve this amount, so that, he says the poor child is bound to suffer from a deficiency , it is only fair to say that this should not necessarily follow in circumstances where foods are rationed, since all children should be receiving their ration, but we know only too well, as Sir John Orr has said, that the protective foods are increasingly rationed by price, and it is clear that they will continue to be so until family allowances help to prevent such an anomaly Who could doubt this who has read the many recent careful studies of working-class diets—for example, that of Najib U Khan in Newcastle-upon-Tyne, in which it is recorded that in unemployed families the average consumption of fresh milk was less than ½ pint per man per week, or that of Dr T N V Potts on 205 families in the West Riding of Yorkshire, in which he showed the average consumption of fresh milk in all the families was not more than 2 pints per head per week, and in which he says "the average consumption of milk per head decreases as the number of young children in the family rises, so that the diets of the poorer groups of families are likely to be specially deficient in the so-called protective foods and more especially in those families which contain several young children "

Of all the administrative difficulties that beset the unwary in a hospital such as ours the difficulty of getting and keeping maids is perhaps the most trying, and certainly the most persistent Mere difficulty of securing an adequate nursing staff pales into insignificance beside this other major evil, an evil not, of course, peculiar to hospitals in these days but possessing for them such nightmarish urgency as threatens to bow down matron and her satellites, who are not easily bowed down We have looked for maids in all sorts of likely and unlikely places—labour exchanges, servants' registries, Women's Voluntary Services—and have enlisted the help of headmasters of schools and many others, often to no purpose Our failure cannot be ascribed to any lack of assiduity or perseverance, for we "would fish all day though not encouraged by a single nibble" Yet sometimes we do have our nibbles, and the catch is an extraordinary assortment of the too well educated, the not too well educated, the impudent, the fat, the angular and the unsophisticated (for a little), we have met them all Some of them have merely inquired about us, some have come and looked at us and gone away, a few have come and looked like staying Hospital life seems to appeal to a few of the more gregarious, but even that appeal sometimes becomes dimmed by the kind of work to which they are assigned There is comparative willingness to do ward maids' duties, but a dearth of applicants for work in the kitchen The process of educating such a varied assortment is naturally painful, doubtless painful for the maids, and often painful enough for their victims The supervision of maids is no easy task, calling for qualities of acidity and pugnacity, commonly only encountered in elderly spinsters The routine seems to be an unending round of roll-calls and remonstrances, homilies on polishes and breakages thinly interspersed with lessons in deportment

If it is difficult to obtain maids it is still more difficult to keep them Scarcely a month passes without some secession, and occasionally we encounter a phase of mass evacuation when whole battalions (or so it seems) threaten to down tools in a body and away like some burst of eruptive activity that threatens to throttle our whole domestic being The end of the month is a period of tribulation and of dread, of stock-taking and of retribution We then speculate on how many will leave us on the morning after next pay day The factors producing these major disturbances are sometimes wholly beyond our control, for a very minor incident in kitchen warfare can precipitate a crisis far-reaching in its effect and may lead to the defection of considerable cohorts Our geographical situation, remote from large centres of population, does little to commend us to our maids, and we are driven in self-defence to provide for their entertainment as liberally as we can in the hope that we may compensate in our amateurish way for the missing flesh-pots Certain it is that our maids are amongst the most regular attenders at our entertainments, as they are the most outspoken critics of our entertainers

* * *

I wonder whether the Dunmow flitch is to be offered this year Since 1244 it could be claimed by any pair who were prepared to swear at the end of their first year of married life that they had had no quarrel and had never wished the knot untied The kudos of winning used to be more important than the prize itself, and few thought it worth while to indulge in an orgy of marital bliss for a mere chunk of bacon But now the boot is on the other foot, what is fame compared with enough pig to last a small family for months? The flitch would be free, of course, but would it be couponless? If so the judges had better prepare for a rush of entries like an Irish sweepstake and we must look for a pandemic of nauseating sweetness in the home, at least when there are witnesses present

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PHENOTHIAZINE has established itself in veterinary medicine as an anthelmintic with a low toxicity, and in our own columns (*Lancet*, 1940, 2, 808) Dr P H Manson-Bahr has described its application in human medicine to the treatment of threadworms I C I (Dyestuffs) Ltd inform us that they have made the drug readily accessible for this purpose in 1 gramme tablets A sweetened granule form containing 25% phenothiazine will also shortly be available for children

Letters to the Editor

AIR-RAID STRAIN IN MENTAL-HOSPITAL ADMISSIONS

SIR,—When assessing ætiological factors in cases admitted to this mental hospital, we have had to consider the possibility of air-raid strain as playing some part, since this is not infrequently suggested by relatives on the routine inquiry form I am therefore investigating all cases admitted since Oct 1, 1940, from this point of view, and hope to furnish a detailed report at some future date Meanwhile, the gist of an analysis of the first 200 cases may be of interest Air-raid strain as an ætiological factor was suggested in 25 (12½%) of the cases, but in only 2 (1%) was this regarded as of major importance and in 3 (1 5%) as partly contributory The former 2 cases have both recovered, and one of the latter group has departed much improved It is not therefore expected that there will be any burden on mental-hospital accommodation as a result of air raid strain

I would also like to record that although our hospital has a fair share of the noises on the South Coast, and on one occasion received a direct hit, the demeanour and behaviour of the 1200 patients has in no way been affected Occasionally there is a complaint about disturbed sleep at night, and a few patients still maintain that they will not get out of bed for Hitler or anybody else!

Knowle Mental Hospital, Fareham I ATKIN

A PSYCHIATRIC CASUALTY

SIR,—I have recently come across a type of case which must be very common in certain areas in these days of intensive and prolonged emotional stress and which should receive prompt recognition and treatment

A man of 38, single, was working as a fitter in a well known south coast port during August of last year His employers were working on Admiralty contract and he was engaged on this work During the course of his duties he suffered an injury to his back which incapacitated him for a fortnight, though no actual injury was ever demonstrated After this he returned to work and remained there with frequent interruptions due to hysterical "collapses" until Dec 26, when "conditions became intolerable" and he returned to his home in the north During this period (August to December) he was subjected to blitz conditions, and, to cut a long story short, there is little doubt that his final collapse and his present state are due to fear of bombing He naturally attributes his emotional state to his accident and is at much pains to convince all and sundry of his immunity from the consequences and effects of war in the air By reason of the nature of his work, he is apparently bound to return to the scene of his fears if he recovers, and so he is becoming a confirmed hysteric and he therefore requires intensive psychotherapy and rehabilitation

In my opinion this man is a psychological casualty of war and should be treated as such at a neuropsychiatric unit, but he is not eligible for treatment under the Emergency Medical Service—this would doubtless create a precedent! There must be many similar cases needing such specialised intensive treatment, who for lack of suitable provision are becoming economic dead weights to the community at a time when the community can ill afford such luxuries

Ryhope, Sunderland T M CUTHBERT

INJURIES TO TENDONS

SIR,—Your review (p 382) of "Surgery of Modern Warfare" (Part III), in discussing the suture of the flexor tendons of fingers and hand, states that if the sheath is involved the prognosis is hopeless In a recent discussion in the *British Medical Journal* the consensus of opinion was similar In a large glass works the medical officer is faced with divided tendons much more frequently than in other industries, and after various trials I have come to the conclusion that although the problem of the digital portion of the flexor tendon is a difficult one it is by no means insoluble Since in recent years I have had some measure of success, ranging from partial to full restoration of function, a summary of the technique employed may be of interest instead of 8s 6d with 6s 6d instead of 5s. on the first £165 of taxable income Income-tax will be payable on all incomes over £110, instead of £120 as at present, and this will bring another two million people into the taxable class The allowance for earned income is reduced from a sixth (maximum £250) to a tenth (maximum £150) and the personal allowance from £170 to £140 for married people and from £100 to £80 for others The extra tax paid because of the reduction in earned-income and personal allowances will be credited to the taxpayer in the Post Office Savings Bank at the end of the war, so that Mr Keynes's plan for compulsory savings has made its mark The same idea is seen in the concession by which 20% (less tax) of the excess profits duty paid will be set aside as a reserve for postwar reconstruction No change is made in allowances for children Where tax is deducted from salaries the new scale will take effect from Nov 1, for others it will apply to the instalment due on Jan 1, 1942 The Chancellor promised that the Government would extend the principle of stabilising the prices of essentials—including fuel and lighting—with additional subsidies where necessary The medicine stamp duties are to be repealed from Sept 2 and the Minister of Health will be introducing legislation " to maintain a fair balance between the interests of the pharmacists and of other vendors "

QUESTION TIME

Salaries for Nurses

In answer to a question the Minister of Health made the following statement The existing and prospective shortage of nurses in hospitals is giving rise to anxiety Thanks to the reinforcements provided by the Civil Nursing Reserve the emergency hospitals dealing with civil and military casualties are for the most part adequately staffed. Our main concern is with the hospitals which provide for the general needs of the civil population and in particular those dealing with infectious disease and the old and infirm Here the shortage is in some cases acute Available beds cannot be used on account of shortage of nurses, and staffs are carrying on under increasing difficulties To meet this situation, I propose to appeal to the women and girls of the country to enrol for nursing service in any part of the country. Those who join as nursing auxiliaries will not be sent to hospitals dealing with infectious disease or mental cases or to sanatoria, unless they volunteer for this service The appeal will be especially addressed to the age groups which are shortly to be registered

I wish to stress the importance of securing a larger number of women who are prepared to take up nursing as a life career Those who are prepared to join on this basis and accept training in the hospital allotted to them will receive salaries at the rate of £40 a year rising by annual increments of £5 It is proposed also to increase the salaries of members of the Civil Nursing Reserve in residential posts in hospitals The salaries for the assistant nurse and trained nurse include a sum representing the employer's contribution towards superannuation and the rates[1] will be

For nursing auxiliaries	£55 a year
For assistant nurses	£70 a year
For trained nurses	£105 a year

in each case with board, lodging and laundry and indoor and outdoor uniforms Those who respond to the appeal and are accepted will receive a guarantee of a year's employment and will be asked to undertake to serve for that period. Recruits who join as nursing auxiliaries will receive a short course of instruction in hospitals during which they will receive 10s a week as pocket money, together with board, lodging and laundry

The inter-departmental committee under the chairmanship of the Earl of Athlone made a number of important recommendations, consideration of which was deferred by the war Of these perhaps the most important related to the machinery for fixing the salaries and pensions of nurses on a national basis, and recommended the establishment of salaries committees for this purpose analogous to the Burnham committees in the teaching profession. I propose to take immediate steps to consult the various interests concerned with a view to establishing the necessary procedure This, however, will take time, and in the meantime it is in my view very desirable that hospital authorities should review the salaries now paid to their nursing staffs in the light of the new rates.

I have already on the staff of the Ministry at headquarters and in our regional offices 53 state registered nurses, partly recruited for the E M S services and partly engaged on the public health and hospital work of the department Arrangements have now been made for the whole of this work to be grouped on its professional side under the general direction of a chief nursing officer with two deputies I have appointed as chief nursing officer and chief matron of the Emergency Hospital Service Miss Katherine Watt, principal matron of the Emergency Medical Service One of the posts of deputy will, in my view, be most appropriately filled by the appointment of a nurse with current experience of hospital management, and I hope to make such an appointment at a very early date I also propose that the second deputy should be a nurse with special experience of public health and domiciliary nursing services I have asked the Parliamentary Secretary to make the nursing division her special concern. The Secretary of State for Scotland is making similar arrangements

Mr **RHYS DAVIES** Will the Minister bear in mind that a number of girls and women are willing to serve in hospitals if they are not thrust into nurses' homes ? Can they not engage in this service and go to the hospitals to do their day's work, going home in the evenings when their homes are near the hospital ?—Dr **SUMMERSKILL** Does the Minister realise that the new scales are not as high for a qualified nurse as a girl can receive in domestic service to day ?—Mr **BROWN** I have reason to believe that these scales will be regarded, taken as a whole and in the light of what I have stated, as a very great forward movement, and they will mean very heavy extra expense for all hospitals concerned as well as for the Government emergency scheme —Mr D **FRANKEL** Does the Minister realise the repercussions which this will have financially on the local authorities, and does he propose to make any subsidies to them ?—Mr **BROWN** I will take into consideration any representations that are made when the facts are brought out I am told that for the London County Council the suggested increase for nurses in all grades would involve an additional expenditure of £70,000 a year —Mrs. **AGNES HARDIE** Will the Minister consider training some men as nurses under the same wages and conditions ?—Dr **SUMMERSKILL** At £55 a year ?—Mr **BROWN** There are, of course, male nurses, and they do very valuable work for the patients in regard to whom their services are appropriate —Mr J **MCGOVERN** Are these wages intended to drive girls into munition work ?—Mr **BROWN** I have reason to believe that they will help to solve what has been one of the most difficult of our problems —Mrs H B **TATE** The Minister obviously comes within the definition of an optimist

Sir **STANLEY REED** Since many nurses marry and do not qualify for superannuation allowances, will the Minister consider a provident fund which would benefit both those who do their full term and those who retire before its completion ?—Mr **BROWN** That will be one of the long term questions to be discussed.

Superannuation of Service Nurses

Viscountess **ASTOR** asked the Secretary of State for War whether his attention had been called to the fact that voluntary-hospital nurses who were called up for duty in His Majesty's nursing services had either to lose a substantial part of their pension benefits by reducing their contributions to the superannuation scheme or to cease the contributions and convert their policy into a paid up assurance, or to pay contributions usually paid by their hospital as well as their own contributions , and whether, in view of the hardships imposed at present on nurses, he would arrange for the payment by the War Office of the employers' contributions —Captain H. D R. **MARGESSON** replied I have given careful consideration to the position under the Federated Superannuation Scheme of nurses from voluntary hospitals called up as members of the Queen Alexandra's Imperial Military Nursing Service Reserve or the Territorial Army Nursing Service, but I am afraid that it would not be practicable for the War Office to pay the employer's contribution towards superannuation benefits, which had previously been paid by the hospital. I am, however, reviewing the conditions of service in the nursing service, and I hope to be in a position to announce very shortly certain increases in pay which will help to meet the difficulty —Miss I. **WARD** In view of the fact that these negotiations have been going on for over 18

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[1] Current rates of pay for nurses in the Civil Nursing Reserve employed in hospital are nursing auxiliaries £2 3s 6d a week (less board lodging and laundry) assistant nurses £64 2s a year (plus board lodging and laundry) trained nurses £99 2s a year (plus board lodging and laundry)

In my view the figure of 30 g daily of first-class protein for a child of 8–10 years is on the low side, even the B M A diet of 1933 gave a figure of 35 1 g, and the League of Nations 1936 report gives 44 g for a child of 6 years and 56 g for one of 12–14 years, say, 50 g for a child of 8–10 years My figures (*Publ Hlth*, April, 1939) showed that when rate of growth in children was correlated against the ratio of expenditure on first-class protein and energy foods (P/E) an improvement in the rate of growth occurred up to a ratio of 1 5, this being the highest ratio recorded, so that for a child of 8–10 years the weekly expenditure of 50 pence of the B M A 1933 diet should have been expended in the ratio 32 1/17 9 and not 23 5/26 5 as the diet suggested This would mean that even the B M A 1933 diet should have permitted 50 g a day and not 35 1 g as given But this is not the whole story, for further figures (*Publ Hlth*, July, 1939) have suggested that the B M A diet is itself not more than 64% of that which would provide the best rate of growth in children, and if this is the case even 50 g must not necessarily be looked on as the amount which nature would provide by choice It is not surprising, therefore, that the average rate of growth of a number of public schools was shown to be 53 8% greater than the average of elementary-school children

In these circumstances, therefore, special attention should be given to this problem and no effort should be spared to increase the amount of first-class protein available for our children In my view the best method is to increase the milk production and to import dried milk powder, both liquid and dried milks should be made available to families with children at reduced rates, so that not less than the equivalent of 1½ pints a day is consumed by every child This quantity of milk provides roughly 27 g of first-class protein, which may be taken as somewhere near half the amount necessary At the same time, of course, it will provide other valuable growth-promoting substances, such as the essential mineral elements calcium and phosphorus, which cannot be obtained so readily in any other way Another measure which might reasonably be taken would be to lower the age of the meat ration to perhaps 2 years so that the larger adult portion of meat is made available to all children In doing this we must not imagine for a moment that making the meat available is the same as providing it, since the larger families have not the means to purchase it even when it can be bought Can any time in our history be more propitious than this for introducing family allowances?

Warwick FRASER BROCKINGTON

SCOTLAND

PARATYPHOID IN THE HIGHLANDS

THE outbreak of paratyphoid B in the shires of Ross and Inverness has raised some interesting administrative problems although clinically the disease was familiar enough Frontal (or occipital) headache plus slight epistaxis left little doubt about diagnosis once the epidemic was recognised, and there was at least one case of intestinal hæmorrhage serious enough to require transfusion Nevertheless the mimicry of other diseases has led in places to some delay in notification The first case was diagnosed about six weeks ago near Tain in Ross-shire and the main incidence was in the eastern part of that county, particularly around Alness, where over 50 cases occurred in one practice Up to the time of writing some 40 cases have been reported at Inverness and a dozen at Nairn, isolated cases have turned up in remote spots The fever hospital at Strathpeffer has admitted more than 80 of the patients, the segregation regarded as essential by the health authority not always proving acceptable to the local gentry Sulphonamides have been used pretty freely in daily doses of 6 g or so without apparent effect on the course of the fever The distribution of the outbreak soon acquitted either water or milk as the vector, but the pastrycook is still under suspicion A salutary by-effect of the outbreak has been a recognition of the need for protecting institution staffs against falling victims to infection The less heroic members of the staff are, however, apt to compare the painful local reactions after inoculation with the apparently lesser discomfort of a mild attack of the disease

Parliament

IN the House of Lords on April 2 Lord HANKEY said that the three great pillars of the permanent civil research organisation of the Government were the Department of Scientific and Industrial Research, the Medical Research Council and the Agricultural Research Council Important research organisations also exist in the Admiralty, the Ministry of Supply, which undertakes most of the research work for the War Office, the Air Ministry and the Ministry of Home Security, while the Scientific Advisory Committee, of which Lord Hankey is chairman, links up through the Royal Society the great stream of outside research with these Government activities

Speaking of the work of the Medical Research Council Lord HANKEY said that in concert with the Ministry of Health preparations were made even before the war to safeguard public health against the risks of war conditions An Emergency Public Health Laboratory Service was established with laboratories all over the country so that any unusual outbreaks of disease might be rapidly identified Stocks of anti-sera and vaccines were accumulated and distributed throughout the country The application of research in nutrition usually lagged some fifteen years behind discovery But under pressure of war conditions the results of research are now being applied in many directions A stream of guidance is being issued to the public bringing out the importance of milk, potatoes and vegetables, which provide the essential vitamins and mineral salts in their natural and most effective form, and right methods of cooking A national wheatmeal bread, the result of concentrated emergency research, has been put on the market Lord HANKEY emphasised that the sphere of the Medical Research Council extends far beyond medicine as that term was generally understood It is concerned in all problems that affected man's health and efficiency. We are engaged in a death struggle, but Lord HANKEY held that our scientists are at least as good as those of Germany, and we are building a scientific equipment which is destined to play an ever-increasing part in our war effort and in the period of reconstruction which must follow

Sunday Opening

On All Fools Day the House of Commons discussed an order in council giving discretionary powers to local authorities to open on Sundays theatres and music halls where troops and changed industrial conditions created a special demand To a lively debate which, as Mr A P HERBERT said, showed sincerity and eloquence if not always Christianity, Sir FRANCIS FREMANTLE brought a whiff of scientific detachment when he claimed that the jazzification of the Sunday was a further inroad on the mental health of the nation The preservation of his Sunday rest was now especially important to the worker Mr HERBERT MORRISON who summed up said Parliament had had a day out of the ordinary rut and they were probably all the better for having had a free and independent discussion He pointed out that the regulation would end with the war and that it preserved local option He believed it would help to keep people cheerful and happy But on a free vote the order was annulled by 144 to 136

The Budget

The main aim of Sir KINGSLEY WOOD in the fourth war budget, which he introduced on April 7, has been to ward off inflation He puts our expenditure for the coming year at £4207 million (excluding the value of goods obtained from the United States under the Lease and Lend Act and payments to be made there for current orders), compared with the estimate of £3884 million for last year This total includes certain expenditure "covered by the gross balances of the Dominions and other countries," and the figure for domestic expenditure may be put at £3700 million Of this about £1600 million is expected to come from existing taxation, and the same sum from savings, leaving a gap of £500 million to be filled if inflation is to be avoided Half of this the Chancellor hopes to meet by increased savings, and the remaining £250 million is to be raised entirely from direct taxation The standard rate of income-tax will be 10*s* th a view to making it unnecessary for mothers with chil- en, who are ill and require attention, to stand for hours in eues ?—Mr BROWN I have been in consultation with the nister of Food, and I understand that he has under con- deration the special needs of young children for such foods

London Children killed by Enemy Action

In reply to a question Mr HERBERT MORRISON, Home cretary, said The number of children under sixteen killed enemy action in the whole of the London civil defence gion between Jan 1 and Feb 28 this year was 76 The mber injured and detained in hospital was 136

Obituary

DAVID DIAMOND

M R C P , D P H

Dr Diamond, deputy medical officer of health for Hull since 1939, has been killed in an air-raid on that city Since the outbreak of war he had been largely responsible for the A R P casualty services there and when he died he was on duty Dr Diamond was born in London but he spent part of his boyhood in South Africa and began his education there at the University of Cape Town He qualified M R C S from St Bartholomew's Hospital in 1923, and after holding some resident appointments he decided to take up public-health work He gained experience of handling men and affairs in Holborn and the Port of London and in 1931 he was appointed assistant medical officer of health for the Hull and Goole port authority The same year he obtained his D P H In 1934 he became senior assistant medical officer of health in charge of the tuberculosis department at Hull and his published work reflects his lively interest in the welfare and problems of the ex-tuberculous patient Dr Diamond leaves a widow and two young daughters

Medical News

University of London

At recent examinations I H Evans and C K Warrick were successful in Part I of the postgraduate diploma in medical radiology

Royal College of Physicians of London

At a meeting of the college on April 7, Sir Charles Wilson was elected president

The licence was granted to Mohamed Abdul Hafeez (Osmania University and West London Hospital), and diplomas in ophthalmic medicine and surgery and in tropical medicine and hygiene were granted to those named in our issue of March 22 (p 404) in a report of a meeting of the Royal College of Surgeons

Society of Apothecaries of London

The following candidates, having completed the final examination, are granted the diploma of the society entitling them to practise medicine, surgery and midwifery F B Beaver, Lond Hosp , J S McGillivray, McGill and Lond Hosp , R South, Guy's , A M Williams, Lpool C H Wood, Camb and Middlesex

University of Edinburgh

On April 4 the following degrees and diplomas were conferred —

M B , Ch B—K W Beetham J F Cameron Frances C E Hutchison A F Lang Bertha Macfie W A T M Kendrick, A K M Macrae Joan M M'William T M Munro E J Noble, M P Prestwich Mary Scott-Wilson J G Shearer Robert Taylor, and C C M Watson

D P H—Mohammad Nazir

D T M & H—Eustace Akwei D W Horn and Charles Odamitten-Fi mon

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Among the casualties sustained in the loss of H M S *Manistee* Temp Surgeon Lieutenant L R Blair, M D St And , R N V R , is posted as missing, presumed killed

At the next meeting of the Shaftesbury Military Hospital Medical Society on Tuesday, April 15th, at 3 P M , the address will be given by the president, Major General F Casement

Notes, Comments and Abstracts

A LIBRARY SEEKS SANCTUARY

Sir D'Arcy Power, having decided it is no longer safe to have a collection of books under one roof in London, is offering his library for sale at Messrs Sotheby within the next few weeks The collection includes a series of some sixty or seventy editions of the Regimen Sanitatis Salerni, chiefly French, German and English a wonderful storehouse of popular dietetics from which came much of the information which is still in use, such as " The best Doctors are Dr Diet and Dr Quiet " It began life as a few hundred verses dedicated to the eldest son of William the Conqueror, though he never came to the throne It was copied over and over again in every European language each editor adding something of his own until when printing was introduced, it had become a substantial volume with woodcut illustrations. The collection was formed with the object of showing how successive editions had been enlarged

The library also contains most of the works of Osler and Harvey Cushing, many of which are autographed, and a series of unpublished letters from Dr Weir Mitchell about William Harvey Harvey and John Hunter are both well represented and there is a valuable collection of the writings of English surgeons of the sixteenth century The chef d'œuvre is a small volume date 1595 which Dr Bayley used to send as a Christmas present to his friends This volume has an inscription in Dr Bayley's handwriting when he presented it to the Lord Chief Justice of King James I and is therefore unique, for the name was not known and Bayley has signed this copy in full He was a fellow of New College Oxford and is buried in the ante-chapel The book deals with diseases of eyesight, and subsequent editions, considerably altered, were issued by his nephew, Dr Bannister There is also a copy of the 1552 edition of the " Woman's Book," which lacks the last page, and an autographed letter from that genial anatomist, Dr Oliver W Holmes sending a copy of " The Wonderful One-horse Shay "

PICTURES OF HEALTH

EDUCATION takes a short cut when it appeals to the eye The Central Council for Health Education have always kept this well in mind and in a new series of posters and leaflets they cover a remarkably wide tract of country. The eye tires quickly, so the posters are numerous and can be often changed , they are also by various artists, which means that the style has no chance to pall , and they show the advantages of exercise, cleanliness, of brushing your teeth, of fresh air and appropriate food from dozens of unexpected and attractive angles The captious might wish for a little more emphasis on the droll side of these activities—wit in a poster stamps it on the memory as an anecdote drives home the point of a lecture But they have every other quality to make them memorable and a few of them have fun too The health leaflets are pithy and easily assimilated They deal with diphtheria, measles, louse infestation, and purification of water-supplies, and are sold at cost price to local authorities for distribution by medical officers of health The council think it would be useful if they could also be displayed in the waiting-rooms of doctors and dentists, and are ready to suppply a limited number of free copies to those who apply to the secretary Tavistock House, London, W C 1

DOCTOR AND FARMER TOO

Prof Thomas Bodkin's godfather and uncle by marriage, Frank MacMahon, inherited an estate in the west of Ireland but his affairs did not prosper At the age of 40 he decided to become a doctor, qualified, and at Beauparc, co Kildare, combined general practice with farming to his own great content and to that of all with whom, professionally or otherwise, he came in contact He was a large man in every sense of the word, devoted no less to the sports and pastimes of the countryside than to his work, and idolised by his small godson who now writes of him with reverence and affection in a short but altogether charming book " My Uncle Frank " (Robert Hale 5s) is in no sense a biography ; it is a series months can the Minister say when he will be able to give decisions on the review ?—Captain Margesson I think the matter is coming to a head now

Removal from the Nursing Register

Mr R W Sorensen asked the Minister of Health whether he is aware that many hospital authorities refuse to employ fully qualified nurses, or to train probationers, who have been, or are, unmarried mothers , and, in view of the recent action of the General Nursing Council in removing the name of a nurse who was an unmarried mother from their register, whether he will take action to prevent unjust actions of this character ?—Mr Brown The answer to the first part of the question is No With regard to the second part of the question, an appeal lies to the High Court against a decision of the General Nursing Council to remove the name of a nurse from the register, and the matter is not one in which I have power to take any action —Mr Sorensen In many of these cases is it not morally reprehensible to exclude these women on those grounds, and will he do what he can to discourage it ? —Mr Brown That is a matter of opinion and conviction

Dr Edith Summerskill Does the Minister approve of the removal of a nurse from the register because she has had an illegitimate child in a case where it has not been proved that she has been guilty of professional misconduct with a patient ?—Mr Brown You are asking me to express an opinion upon what the court may or may not say about particular cases, and I must refuse to do that in the absence of any evidence about the cases —Dr Summerskill I am asking the Minister to express an opinion because the Ministry is represented on the General Nursing Council

Rehabilitation of Injured Workers

Mr T Magnay asked the Minister whether he is now able to make a statement on the steps proposed for securing that modern and properly organised treatment is provided for fracture cases occurring amongst industrial workers ?—Mr Brown The Secretary of State for Scotland and I have consulted the Minister of Labour and other Ministers concerned, and propose to provide for these cases as far as possible under the Emergency Hospital Scheme The hospital accommodation available under this scheme includes a large number of beds in hospitals and orthopædic centres which are, or will shortly be, specially equipped for dealing with cases of fracture In these hospitals and centres there are available, in addition to surgical skill of the highest class, the most modern forms of treatment by physiotherapy—including massage, electricity, and remedial exercises—and occupational therapy For the purpose of treating war casualties, both military and civil, these facilities are welded together into a comprehensive organisation, supervised by the consultants in orthopædic surgery employed by the Ministry of Health and the Department of Health for Scotland, so that the patients can be sent to the hospitals best suited for dealing with their injuries and, if necessary, transferred from one to another in the course of their treatment The treatment of casualties is and must remain the primary purpose of the Emergency Hospital Scheme But, in order to secure the fullest possible use of the organisation which has been provided, the Government have decided that in so far as there are vacant beds not likely to be required for the treatment of war casualties, they should be made available for fracture cases occurring amongst certain classes of the civil population whose early return to work is of special importance to the national cause Accordingly, cases of fracture sustained, whether in the course of their work or not, by manual workers engaged in any of the following employments, munition work—including ship building and ship repairing—building and civil engineering, mining, agriculture, fishing, public utility undertakings, shipping and transport, will be eligible for treatment in hospitals or centres under the emergency scheme Whole-time paid civil defence personnel will also be included in these arrangements As in the case of certain classes of the civil population who are under existing arrangements admitted to hospitals in the scheme for general treatment, the patient admitted under the new scheme will be expected to contribute through any contributory association to which he may belong, or, if he is not a member of such an association, to pay such amount as he can reasonably afford towards the cost of his treatment, according to ordinary hospital practice I may also add that the ordinary practice in Scottish hospitals will continue

Major Milner Will the same opportunities not be available for part time civil defence workers ?—Mr Brown No —

Sir Francis Fremantle Will these excellent arrangements be extended not only to fracture cases but to many other cases which require the same treatment and rehabilitation, and are equally important, and will the Minister avoid a duplicate organisation ?—Mr Brown There has been no duplicate organisation The number of first class hospitals with first class equipment and surgeons with special qualifications is limited What we have to do is to use these resources to the maximum extent in order to get those injured in industries vital to the war effort and whole time civil defence workers back to their posts at the earliest possible moment

Health of the A T S

In answer to a question Captain Margesson gave the following statement of the medical arrangements in the Auxiliary Territorial Service personnel who wish to report sick attend at the medical inspection room and can there receive outpatient treatment from the medical officer Reception stations are provided for detachments of 300 and upwards and sick bays are opened at medical inspection rooms for smaller units At reception stations, the medical officer, who may be a woman medical practitioner, has a staff including V A D nursing members and members of the A T S , and may have a sister or staff nurse, if required A T S orderlies are authorised in sick bays where the strength of the detachment is over 40 A wing for A T S patients has been established in a large military hospital near London, and there are A.T S wards in over 20 of the larger military hospitals Military families hospitals are also used for the A T S , and all the E M S hospitals are available for them There is an A T S convalescent depôt, and a Red Cross convalescent home is reserved for the use of women serving with the Forces Courses of lectures in hygiene have been arranged as part of the training of officers and other ranks

Replying to a further question Captain Margesson said that the decision to replace civilians by Royal Army Medical Corps women doctors where available on the panels formed to examine A T S recruits was taken partly because the method of payment of civilian doctors was unsatisfactory and partly to economise in medical personnel

Alien Doctors

In replying to a question Mr Brown said it was not intended to fix a maximum number of doctors who should have the benefit of the Medical Practitioners (Temporary Registration) Order, 1941 Up to date 28 doctors of enemy nationality have been selected for employment

Emergency Treatment of Insured Patients

In answer to a question Mr Brown stated that An insurance practitioner is required to make all necessary arrangements for securing the treatment of his insured patients where prevented from giving such treatment himself by urgency of other professional duties or other reasonable cause If neither the practitioner nor his deputy is available for giving treatment in case of accident or other sudden emergency, any other insurance practitioner who may be available can be required to give it A fee is payable to the last mentioned practitioner, subject to the claim being passed by the panel committee The fee is recoverable from the patient's own practitioner unless the panel committee are satisfied that there was reasonable cause for not summoning him

Night Rotas for Doctors

Mr Groves asked the Minister whether, either in areas which had sustained war damage or, generally, any scheme had been formulated or was in contemplation to enable groups of civilian doctors, by rotation, to be on duty at night for all purposes and thus permit the others to obtain relief and rest , and how many insurance committees favoured such an arrangement —Mr Brown replied In a number of areas a rota of doctors for duty at first aid posts, medical aid posts in public shelters, and food and rest centres has been arranged Similar arrangements for providing medical attention for insured persons is a matter for agreement between the panel committee and insurance committee of each area concerned, and detailed information is not available

Special Food for Children

Mr G Mander asked the Minister whether he will consider the advisability of making arrangements for special food, such as eggs and fruit, to be supplied to children needing it for health reasons, through the clinics or some public agency,

ORIGINAL ARTICLES

THE MODERN TROGLODYTE*

BY LORD HORDER, G C V O , F.R C P.
SULTING PHYSICIAN TO ST BARTHOLOMEW'S HOSPITAL LONDON, CHAIRMAN OF THE COMMITTEE ON HEALTH CONDITIONS IN AIR-RAID SHELTERS

AT the outset of this address I want to pay a tribute that vast and anonymous body of men and women o, by remaining in their homes, have reduced the oblem of public air-raid shelters to much smaller mensions than would otherwise have been the case, and ve thus contributed greatly to its solution The inister of Home Security has given these people his ed of praise I should like to add my own These k have obeyed the Minister's exhortation to "dispersal", they have braved the "blitz" above ground, ith the aid of one or other form of domestic protection, they have been busy during the night with their civil fence jobs, with their nursing, their doctoring and eir administrative duties as I say, no praise can be o high for them

EVOLUTION OF THE SHELTER

I don't propose today to discuss controversial matters, r with things as they might have been Things rarely e what they might have been As I remember it, ere was a demand made from several quarters, that the overnment should do something about deep bombroof shelters After a period of conference between the xperts this demand met with a reply which was, in fect a statement of policy, a policy which we now now as "dispersal" It was first clearly defined in 938 It was to be implemented through the local uthorities, by the provision of steel shelters (later called Andersons") for domestic use, strutted basements, ommunal shelters, trenches, subsidiary buildings which ight have a peace-time value, compulsory shelters in onnexion with new buildings and shelters for persons caught in the street"

Let us be frank. Most of us were widely off the mark n our estimate both of the particular nature of the peril, ts results upon life and property, and the reaction of many of the people Those enormous number of asualties which many of us visualised did not, thank od, occur But the damage to our homes far exceeded nything that we foresaw And so when, in August and eptember of last year, the air-raids came in all their ury, we were faced simultaneously with two results for hich we were quite unprepared a large number of omeless people who wanted some sort of protection and an even larger number who, losing all faith in their homes, whether they had, or had not, some form of domestic shelter, ran to earth There is a point past which, in times *of crisis the people will not drill* Policy or no policy, these two masses of people streamed into any underground shelter that seemed to them to be safe "*Seemed* to be safe," I said because, again and again, they chose places which were quite insecure and not infrequently under such military objectives as overhead railway stations and the like They tramped long distances to reach the shelter of their faith, ofttimes this was a haven that was traditional from the last war They queued up outside in the rain as it frequently was, and later in the snow, carrying their bedding and various articles needed for the night This they did day after day, an hour or so before the "blitz" was expected For, instead of the casual and temporary protection by day which had been met by the provision of surface public and communal domestic shelters in which people might sit or stand, the nightly air-raid attacks called for all-night dormitory protection For this the surface shelters were not adapted But nor were the large underground shelters of the people's own choice Thus there arose, and quickly attained alarming proportions, a situation full of hygienic hazards

ABUSE OF THE PROTECTIVE PRINCIPLE

The serious risks to the common health were early recognised by the two central authorities concerned An investigating and advisory committee undertook a rapid survey, reported and made a series of recommendations There were two outstanding facts a state of gross overcrowding and its being, as yet, nobody's job to so condition these places as to make them fit for habitation Some confusion as between the three authorities involved—the ministries, the regional commissioners and the borough officials—was perhaps inevitable That the onus eventually lay with the local authorities was accepted but the serious restriction of personnel and material imposed a tiresome lag upon the implementation of the recommendations mentioned

So that though at the centre guidance and assurance of financial responsibility were quickly forthcoming, at the periphery execution was tardy "Priority" was pleaded to an extent which harmonised rather badly with our reiterated assurance to the civilians that they were "in the front rank" The test of our democratic system of local government was a severe one, and we were too nervous of giving the new concept of regionalisation full play, fearing a clash between these two interests The nervousness was uncalled for, as nervousness generally is for the appointment of Alderman Key as regional commissioner, with shelters as his special work, has been a marked success Complications arose from the fact that some of the largest places chosen by the public for night shelter were private property, which had been invaded willy-nilly In one such place, though the local authority was making slow and entirely inadequate provision, or rather improvision, for sanitation, the cleansing jobs were done—again, and of necessity, inadequately—by the staff of the company owning the property. This gratuitous work, a real bit of national service, was rewarded one morning by the receipt of a notice from the borough sanitary inspector pointing out that a nuisance was being committed by the firm in question!

In a certain provincial centre the owners, or lessees, of a large rambling disused place of entertainment did a good trade by letting out shelter accommodation at so much a week. The only part of the place which could be reasonably regarded as relatively secure was the basement This had been a "chamber of horrors" Perhaps it was this fact and the paintings of horrific subjects on the wall which dictated the price at this level at 2*s* 6*d* On the ground floor the price ranged from 5*s* to 10*s* On the first floor, where security was reduced to nil, you might get a small suite for a guinea A devoted cure acted as cicerone because he knew the intricacies of the place better than anyone else

In another city, which, though very vulnerable, only suffered night raids, a large shelter under a school was full of people, with a pathetic proportion of children, during the afternoon, and a continuous series of entertainment went on

In still another town, whose industry has completely disappeared, a disused railway tunnel had been converted into an underground street, and a mean street at that and the tendency for the population to become residential was increasing "Blitz" or no "blitz" the children did not see the sun, or even the daylight, for days together and the old and infirm came to the surface less often still

I could easily increase these examples of abuses of the principle of protection which led the advisory committee to recommend that all places used as public shelters should be recognised and scheduled or be disallowed. *Recognition* was to entail a standard of security as laid down by the Ministry of Home Security and the possibility of being so conditioned as to be free from danger to the *public health* The situation had however, got quickly into such arrears that, even with the provision of alternative shelter, due notice of what was intended and *posters stating that* what was being done was in the general interest, no little trepidation seized the hearts of some of the authorities on the eve of the closure of the condemned shelter (Certain political capital, *too*, was, in some places, made out of the situation) These fears turned out to be groundless, the people were quite of sketches displaying some of the facets of a sturdy and attractive character and affording also more than a glimpse of a vanished Ireland It is possible that Professor Bodkin views his own early youth through rose-coloured spectacles Be that as it may, call it escapism if you must, there will be many who will be glad to share his view of the spacious and leisurely days at the beginning of the present troubled century

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* Read before the Royal Society of Arts on April 2

AN X-RAY STRETCHER

PHILIPS METALIX have designed a new piece of X-ray apparatus which consists of a stretcher trolley combined with a Bucky table It is a link between the non-mobile and mobile types of unit, and is therefore of value to a hospital with limited means which cannot afford an all-services apparatus but wants more finished radiographic work than is given by the ordinary mobile set The makers claim that with the stretcher radiography of weight-bearing joints, skull radiography and pelvimetry may be satisfactorily performed

It is doubtful, however, whether the ordinary mobile set has sufficient output to provide the necessary penetration for a lateral radiogram of the spine or pelvis, and the quality of the work will necessarily be limited by these factors The Bucky table may be raised or lowered 9 in and adjusted at any position from the horizontal to the vertical The apparatus is a compromise and is unsuitable for specialised skull work, but for ordinary routine radiography it should be a useful adjunct to a mobile set

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Copies of the glossary of psychological terms (see THE LANCET, March 29, p 424) prepared by the brain-injuries committee of the Medical Research Council may be had (price 1*d*) from H M Stationery Office or through any bookseller

Appointments

KEER, K J T, M R C S examining factory surgeon for Wickham Market, Suffolk

KELF H D, M R C S, D P H temp asst M O H (A R P) for Portsmouth

PRINGLE, G H, M R C S, D P H M O H and school M O for Bridgwater, and assistant county M O for Somerset

RAYNER, M M -S, M B Camb, D P M asst physician at the Cassel Hospital for Functional and Nervous Diseases

SHOULMAN, RAHUM, L R C P temp resident asst M O at the borough isolation hospital, Bolton

Births, Marriages and Deaths

BIRTHS

ANDERSON —On March 29, at Exeter, the wife of Surgeon Lieut - Commander E W Anderson, R N V R —a son

MACFIE —On March 31, at Alexandria, the wife of Major W Gordon Macfie, R A M C —a son

MOORE —On March 31, in London, the wife of Mr A M A Moore, F R C S — a daughter

NEWSOM —On April 2, at Johannesburg, the wife of Dr R A Newsom, Northern Rhodesian Medical Service—a daughter

PHILP —On March 30 at Boscombe, Bournemouth, the wife of Captain R A Philp, R A M C —a daughter

SPOONER —On April 3, at Cambridge, the wife of Flying Officer W H C Spooner, R A F V R of Blandford, Dorset—a son

THOMPSON —On April 2, at Market Harborough, the wife of Dr J F Thompson—a daughter

MARRIAGES

FELLOWS—THRUPP —On Feb 26, in Birmingham, Joseph William Edward Fellows, M B, lieutenant R A M C, to Cecile Patricia Thrupp, M R C S

WAY—CORSON —On April 4, at Pennal Geoffrey Leslie Way, M R C S, captain R A M C, to Edith Mairi Reid Corson

DEATHS

BEACH —On April 3, at Reading, Thomas Boswall Beach, C M G, C B E, M R C S, colonel A M S

DUNN —On April 3, at Bengeo, Hertford, Robert Ayton Dunn M D, B Hy Durh, D P H, formerly medical officer of health for Hertford

HAJEK —On April 3, at Dalcham Gardens, N W 3, Markus Hajek, formerly professor of laryngology in the University of Vienna, aged 79

HARTIGAN —On April 3, Thomas Hartigan, M D Durh, Lancaster Close W 2, aged 70

HOGG —On April 3, at Iverna Court, Kensington, Frederick Stanley Hogg, L R C P E

TURNER —On April 7, at Hove, Sir George Robertson Turner, K B E, C B, F R C S, surgeon rear admiral, 1914-18, aged 85

Infectious Disease in England and Wales

WEEK ENDED MARCH 29

Notifications —The following cases of infectious disease were notified during the week smallpox, 0, scarlet fever, 1212, whooping-cough, 4440, diphtheria, 1038, enteric fever, 20, measles (excluding rubella), 14,589, pneumonia (primary or influenzal), 1264, puerperal pyrexia, 154, cerebrospinal fever, 319, poliomyelitis, 3, polio-encephalitis, 2, encephalitis lethargica, 5, dysentery, 140, ophthalmia neonatorum, 79 No case of cholera, plague or typhus fever was notified during the week

Deaths —In 126 great towns there was no death from smallpox or scarlet fever, 1 from enteric fever, 39 (2) from whooping-cough, 20 (1) from measles, 30 (1) from diphtheria, 30 (4) from diarrhœa and enteritis under 2 years, and 87 (9) from influenza The figures in parentheses are those for London itself

Newcastle on Tyne reported the fatal case of enteric fever There were 7 deaths from whooping cough at Liverpool, 6 at Birmingham, and in the same week Glasgow reported 13

The number of stillbirths notified during the week was 247 (corresponding to a rate of 46 per thousand total births), including 15 in London

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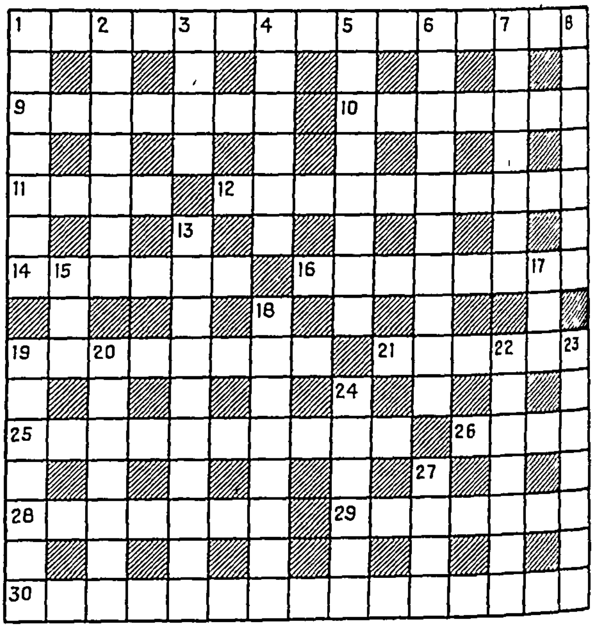
LANCET CROSSWORD



ACROSS

1 Always in the right—unlike Huxley's bishops (Two words, 9, 6)
9 Pure guts when there's an R in it (7)
10 A member of B company (7)
11 Carcinogens (4)
12 Are these found in Labour windows ? (Two words, 5, 5)
14 Result of a tanning (6)
16 Nasty looks (8)
19 Even beer drinkers can get it since they took the B out of beer (8)
21 You can add to them for twenty five years (6)
25 A pot, I agree, this old Greek judge (10)
26 Symptomatic if sardonic (4)
28 Adjective for yeast (7)
29 The man behind the gas warning (7)
30 Traces the brain waves (15)

DOWN

1 Those who die here are unpopular (7)
2 The jealous shade (7)
3 Can be large and surgical or small and international (4)
4 A *B* that was once too busy (6)
5 "A lot dies in it," as the post mortem attendant said (8)
6 Progenitor stricken in years (Two words, 1, 6)
7 This good turn always leaves things upside down (7)
8 Vice employs ? (7)
13 No pay palls here (Two words, 5, 5)
15 Denoted by the mirror of Venus (3)
17 Did he prescribe for horse coughs ? (3)
18 Senile juvenility (8)
19 The conversation of an agreeable 29 ? (7)
20 (Reversed) Opacities here are a haze in the glaze (7)
22 Not a thing to 26 about—or for that matter, with (Two words, 1 3)
23 Coordinate action of muscles (4)
24 Given scope it lends things a solid look (6)
27 You do it if you move, you create it if you succeed, and if
it

many folks consider him. It is one of my chief regrets in this business that we had no time in which to make an extensive census of some of the large public shelters, not merely as to where the people came from but exactly why they were there. As it is we know that shelterers are mainly composed of three groups:

(i) There are those who have no homes because they have been bombed out; these should, as we know, go to rest centres and not to public shelters, but people have a way of not doing what they should, and for a number of reasons, some of which are very good reasons. This group is now much smaller that it previously was because the people forming it are being rehoused in increasing numbers.

(ii) The second group includes those shelterers whose homes have no protection within or without, or whose "Andersons" have become uninhabitable, or whose communal domestic shelters have no amenities.

(iii) The third group of poorer people generally speaking, include those who, whether by birth or status or race or type, are unable to stand up to the terror of the "blitz" and the noise that is incident to it.

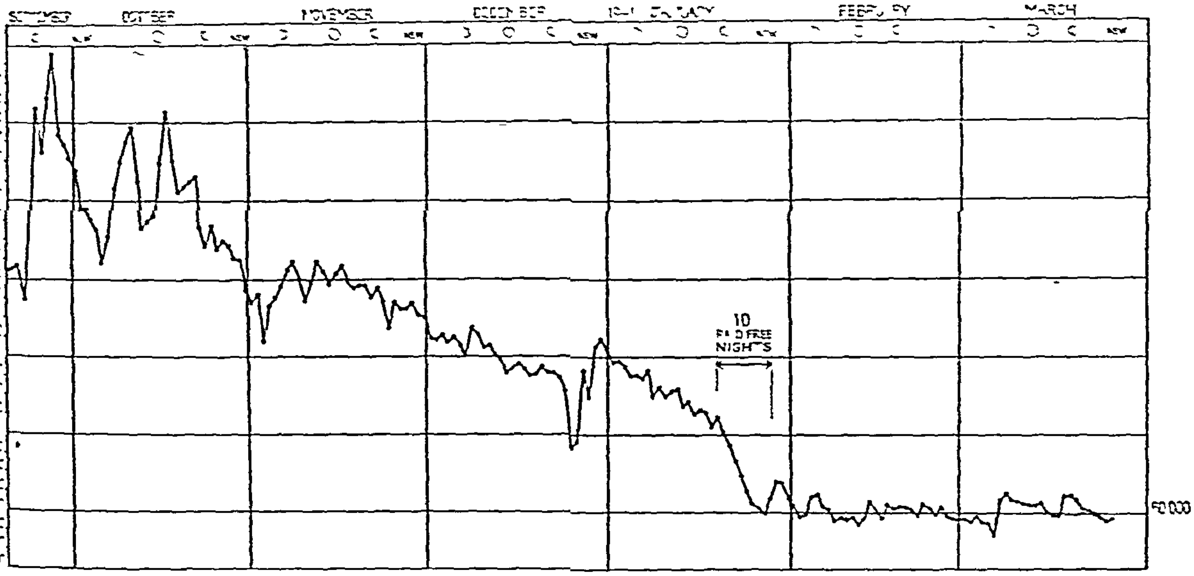
There is always a hard core of person who cannot stand up against fear and noise. We hear a lot about "foreigners and Jews" who crowd into the shelters. They certainly do. But these folk are British citizens or are under British protection. We must give them as much security as we can and we must care for them. That is where we differ from the Nazis. In doing this we show them that stability, a sense of security and neighbourly kindliness are qualities which characterise life in our particular Commonwealth. There is no better way in which to demonstrate the British habit of "live and let live" than this; nor need any priggishness enter into the business of this common humanity in face of extreme peril and great discomfort.

"Great discomfort"; yes. Most of these people work by day; sleep is essential to all work; broken nights make work impossible.

HIS OTHER HOME

But what does it mean when the comfortably housed shelter visitor expresses surprise at the queer places and attitudes in which many of these folk get their sleep? And that they are not only patient but good humoured in the midst of beastly surroundings? It means that there is, alas, too little difference between their nights in the large public shelters last September and their nights in their own homes. This great and cataclysmal upheaval has brought into the shelters for our inspection the slum conditions of which we *said* we were heartily ashamed and which but for the war we were rapidly changing. Is it to be wondered at, therefore, that for many of these citizens the conditions that we have now been able to establish represent for them better and, what is equally significant, happier ones than those they had before the night bombing began?

This is a terrible indictment of what is sometimes, and ironically, called "our social system." But it is true. These folk enjoy a communal life, though of a rudimentary sort, which breeds a spirit of good temper and dignity; it enables them to adapt themselves to the nation's exigency with spirit, and the net effect upon their morale is good. It is a superficial, entirely theoretical and an erroneous view to take of the mass of shelterers that their morale is poor. That it should have needed a war, and life underground for half the twenty-four hours, to achieve a result which is bringing joy to the hearts of our social workers, is a humiliating thought. Yet such is the case. The mood of these people is plastic and they offer a field for health education as never before. They have, and they appreciate, free medical aid. The mothers submit to the shelter doctor's persuasive argument about diphtheria immunisation when the visit to the clinic for this purpose would never be made. The nurse is listened to with attention and her ministrations are gratefully received. The troglodyte wants to be fit. It intrigues him to know how. To get *among* the ordinary folk and give them sane, simple and homely advice—why this has been the dream of doctors with any vision for the past hundred years! Here is field work of the best kind in preventive medicine—to keep the fit fit and to make the near-to-fit fit.



ESTIMATED NUMBER OF PERSONS SHELTERING AT TUBE STATIONS
(including Bethnal Green, Liverpool Street and Aldwych Stations)

DEMOCRACY IN ACTION

A great blot on all this is the position of the children. They should all be away in the country. True, they remain surprisingly healthy, and they behave amazingly well. But these facts do not condone their presence in places which, only by a near miss, have been made hygienically possible. Priestley in one of his recent broadcasts stressed the fact that the national emergency is throwing up leaders. We see men and women taking the lead in this communal shelter life: the level-headed motherly woman, caring for her companions and undertaking for them; the resourceful humorous man who, as shelter warden, secures obedience with a minimum of grousing. Democracy in action, this, and the best possible refutation of its alleged decadence.

The shelterers want, and they get, their own music and their own culture. This culture is real and is good, different though it often is from the culture we sometimes try to impose upon them from outside. We have not encouraged, and we still resist, attempts to force any willing to be guided by hands that showed themselves to be firm as well as wise

PRIMARY DANGERS HEADED OFF

Slowly but surely the primary dangers were headed off The burden of the work fell upon the borough medical officers of health, who have been key men in the situation throughout, the engineers, and the Regional Commissioners and their staffs To the energy of the Shelter Policy Committee of the Ministry of Home Security, under the active chairmanship of Miss Ellen Wilkinson, a great deal is owing Much credit is also due to the Ministry of Health Inspection Committee under Dr P G Stock A number of voluntary bodies have pulled their weight The two ministers, Mr Herbert Morrison and Mr Malcolm MacDonald, holding this amongst their other and even heavier responsibilities, were constantly at close grips with the problem, and both of them showed an urbanity which remained unbroken by the usual receipt of many more kicks than ha'pence A great administrator once said that "expediency is the object of all statesmanship," and that "political action is good or bad according to its consistency, not with theory, but with circumstance" The shelter problem has been a good example of this dictum

Certain guiding principles may be mentioned Those "optimum standards," which make such a strong appeal, were quite unattainable We had to start with minimal standards and improve on these gradually as time and the necessary personnel and materials allowed The limitations of the experts were exposed Some of them hadn't seen the conditions with which we were struggling, and, again, they wanted time to undertake more research into the questions we asked them But time, though the pursuit of science does not usually take much cognisance of it, is vital when we are applying science to the life of man Time was just what we couldn't give We wanted the help of science at the present moment of its development, not as the result of future experiment, so that we might adapt it to these special conditions Some of our expert colleagues were very trying The nearest thing to a public shelter was a canal barge, said one of them, to whom I had appealed on some point, but, he added, reflectively, "a public shelter is *not* a canal barge", so he couldn't make a suggestion

Two concurrent policies had to be constantly kept in view—a short-term policy, by which first-aid was applied to the grosser insanitary conditions so as to reduce these as quickly as possible, and a long-term policy, by which the largest and most unhygienic shelters, where the chief dangers lay, might be gradually unloaded as alternative underground protection could be found, or as the people could be weaned from mother earth and induced to disperse themselves in their domestic shelters or in domestic communal shelters which they could be persuaded to make sufficiently attractive As the autumn and winter approached the problem was further complicated by the fact that many "Andersons" were put out of action by flooding Almost all the trench shelters were uninhabitable for the same reason, quite apart from their being ill adapted to dormitory use Thousands of surface brick shelters, from lack of amenities, did not function during the night, and, indeed, were little used by day

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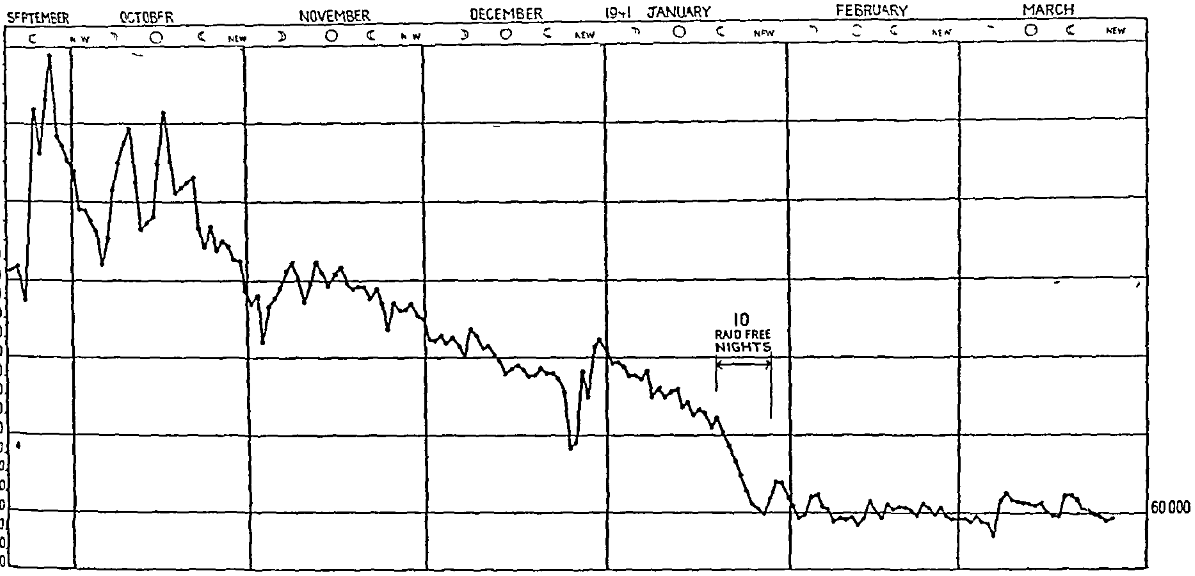
I began by paying a tribute to those people who "stayed put" in their homes or at their posts For those who have stayed in their beds and without bothering about protection, though my own lazy temperament leads me to have some sympathy with them, my reason denies them my praise At heart we are an indolent race, we hate to take pains, even though it be to avoid disaster We take the easy path Some of us make a virtue of this or our friends often read our inertia as virtue, calling us courageous But courage is an *active*, not a passive, trait Then there are some folk who say they don't mind dying, as though *merely* to die, without getting a decent return for our life, is praiseworthy It is, as the Roman said, sweet to die for one's country if the sacrifice is demanded, otherwise it is sweeter still to live for one's country, though sometimes this is more difficult

You may gather from these remarks that I do not disdain the modern troglodyte merely because he takes trouble to protect himself I want to know a great deal more about him before I think him reprehensible, as any folks consider him. It is one of my chief regrets in is business that we had no time in which to make an tensive census of some of the large public shelters, ot merely as to where the people came from, but actly why they were there. As it is, we know that elterers are mainly composed of three groups:

(i) There are those who have no homes because they have een bombed out; these should, as we know, go to rest centres nd not to public shelters; but people have a way of not oing what they should, and for a number of reasons, some of hich are very good reasons. This group is now much smaller at it previously was because the people forming it are being housed in increasing numbers.

(ii) The second group includes those shelterers whose omes have no protection within or without, or whose "Andersons" have become uninhabitable, or whose communal domestic shelters have no amenities.



ESTIMATED NUMBER OF PERSONS SHELTERING AT TUBE STATIONS
(including Bethnal Green, Liverpool Street and Aldwych Stations)

(iii) The third group, of poorer people generally speaking, include those who, whether by birth or status or race or type, are unable to stand up to the terror of the "blitz" and the noise that is incident to it.

There is always a hard core of person who cannot stand up against fear and noise. We hear a lot about "foreigners and Jews" who crowd into the shelters. They certainly do. But these folk are British citizens or are under British protection. We must give them as much security as we can, and we must care for them. That is where we differ from the Nazis. In doing this we show them that stability, a sense of security and neighbourly kindliness are qualities which characterise life in our particular Commonwealth. There is no better way in which to demonstrate the British habit of "live and let live" than this, nor need any priggishness enter into the business of this common humanity in face of extreme peril and great discomfort.

"Great discomfort", yes. Most of these people work by day; sleep is essential to all work; broken nights make work impossible.

HIS OTHER HOME

But what does it mean when the comfortably housed shelter visitor expresses surprise at the queer places and attitudes in which many of these folk get their sleep? And that they are not only patient but good humoured in the midst of beastly surroundings? It means that there is, alas, too little difference between their nights in the large public shelters last September and their nights in their own homes. This great and cataclysmal upheaval has brought into the shelters for our inspection the slum conditions of which we *said* we were heartily ashamed and which, but for the war, we were rapidly changing. Is it to be wondered at, therefore, that for many of these citizens the conditions that we have now been able to establish represent for them better and, what is equally significant, happier ones than those they had before the night bombing began?

This is a terrible indictment of what is sometimes, and ironically, called "our social system." But it is true. These folk enjoy a communal life, though of a rudimentary sort, which breeds a spirit of good temper and dignity; it enables them to adapt themselves to the nation's exigency with spirit, and the net effect upon their morale is good. It is a superficial, entirely theoretical, and an erroneous view to take of the mass of shelterers that their morale is poor. That it should have needed a war, and life underground for half the twenty-four hours, to achieve a result which is bringing joy to the hearts of our social workers, is a humiliating thought. Yet such is the case. The mood of these people is plastic, and they offer a field for health education as never before. They have, and they appreciate, free medical aid. The mothers submit to the shelter doctor's persuasive argument about diphtheria immunisation when the visit to the clinic for this purpose would never be made. The nurse is listened to with attention and her ministrations are gratefully received. The troglodyte wants to be fit. It intrigues him to know how. To get *among* the ordinary folk and give them sane, simple and homely advice—why, this has been the dream of doctors with any vision for the past hundred years! Here is field work of the best kind in preventive medicine—to keep the fit fit and to make the near-to-fit fit.

DEMOCRACY IN ACTION

A great blot on all this is the position of the children. They should all be away in the country. True, they remain surprisingly healthy, and they behave amazingly well. But these facts do not condone their presence in places which, only by a near miss, have been made hygienically possible. Priestley, in one of his recent broadcasts, stressed the fact that the national emergency is throwing up leaders. We see men and women taking the lead in this communal shelter life: the level-headed, motherly woman, caring for her companions and undertaking for them; the resourceful, humorous man who, as shelter warden, secures obedience with a minimum of grousing. Democracy in action, this, and the best possible refutation of its alleged decadence.

The shelterers want, and they get, their own music and their own culture. This culture is real and is good, different though it often is from the culture we sometimes try to impose upon them from outside. We have not encouraged, and we still resist, attempts to force any willing to be guided by hands that showed themselves to be firm as well as wise

PRIMARY DANGERS HEADED OFF

Slowly but surely the primary dangers were headed off The burden of the work fell upon the borough medical officers of health, who have been key men in the situation throughout, the engineers, and the Regional Commissioners and their staffs To the energy of the Shelter Policy Committee of the Ministry of Home Security, under the active chairmanship of Miss Ellen Wilkinson, a great deal is owing Much credit is also due to the Ministry of Health Inspection Committee under Dr P G Stock A number of voluntary bodies have pulled their weight The two ministers, Mr Herbert Morrison and Mr Malcolm MacDonald, holding this amongst their other and even heavier responsibilities, were constantly at close grips with the problem, and both of them showed an urbanity which remained unbroken by the usual receipt of many more kicks than ha'pence A great administrator once said that "expediency is the object of all statesmanship," and that "political action is good or bad according to its consistency, not with theory, but with circumstance" The shelter problem has been a good example of this *dictum*

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You may gather from these remarks that I do not disdain the modern troglodyte merely because he takes trouble to protect himself I want to know a great deal more about him before I think him reprehensible, as anterior aspect of the neck, and sometimes in the conjunctivæ and soft palate (present in case 2) *Lungs* often show the usual signs of death from asphyxia Subpleural hæmorrhages are seen, the lungs appear voluminous, cyanotic and œdematous On section, areas of congestion and œdema intermingle with aerated areas Microscopically the alveoli contain inflammatory exudate, red cells and leucocytes With appropriate staining many emboli are seen in the arterioles and capillaries *Brain* there is usually some congestion of the meninges and the brain substance On section a large number of petechial hæmorrhages are seen scattered throughout the white matter especially in the region of the centrum ovale Microscopically, fat-emboli can be demonstrated in the arterioles and capillaries in all parts of the central nervous system The petechial areas show a fat-embolus filling a small arteriole, around which is a circular zone of necrotic brain tissue, again surrounded by a circular zone of extravasated red cells *Heart* streaky hæmorrhages are often seen beneath the serous pericardium and in the substance of the myocardium Microscopically, small fat emboli can be seen filling the arterioles and capillaries in these areas and causing minute hæmorrhagic infarcts *Kidneys* systemic fat emboli invariably involve the kidney, though they usually do not show any characteristic changes microscopically Large snakelike emboli are often seen filling the capillaries of the glomeruli on microscopic examination

SYMPTOMS AND PHYSICAL SIGNS

The capillary bed of the lungs is the first obstructive area to fat after absorption into the blood-stream Fischer (1914) pointed out that the lungs are capable of accommodating large numbers of fat-emboli, and it is only in severe cases that the embolism obstructs the pulmonary circulation Payr (1900) noted that the patient will either die as the result of asphyxia from the emboli in the lungs or the emboli will be driven through the pulmonary vessels into the arterial side of the circulation where death will result from involvement of the brain or the heart Hence two or three main clinical types are described—pulmonary fat-embolism, systemic fat-embolism, and, by some authorities, a cardiac type (Warthin 1913) But few of the cases conform strictly to any particular type and more often, as in the three cases reported here, the clinical picture indicates both pulmonary and systemic infarction

Groendahl (1911) recognised two clinical varieties of pulmonary fat-embolism In one of these, a few hours after trauma, large amounts of fat are absorbed rapidly, flood the pulmonary circulation, and the patient dies suddenly with clinical signs of acute œdema of the lungs The other type develops more slowly, usually three or four days after the accident, and the patient during this interval remains quiescent or at the most shows a few signs of restlessness or anxiety, then a troublesome cough appears which may or may not be accompanied by blood-stained sputum, there are dyspnœa, cyanosis and signs of pulmonary œdema, and the respirations become stertorous and develop Cheyne-Stokes rhythm The patient finally dies in coma, referable partly to the asphyxia and partly to disturbance of the cerebral circulation The sputum, if appropriately stained, often shows fat globules, this has been regarded as pathognomonic but more recent work proves that fat globules are present in the sputum of cases of tuberculosis, pneumonia and various other toxic conditions

Vance (1931) divided the symptoms of cerebral fat-embolism into three stages, which sometimes can be differentiated sharply but may shade imperceptibly into one another In the first stage the patient is relatively comfortable and free from any complication, this lasts usually for 48–60 hours, but may fluctuate from 4 hours to 9 days, being the interval that elapses between the trauma and the onset of the first symptom In our series, it lasted 56 hours in case 1, 36 hours in case 2, and 37 hours in case 3 Then follows the second or soporific stage, characterised by restlessness, tachycardia, precordial pains and dyspnœa Shortly afterwards cerebral symptoms become manifest such as insomnia, loss of memory, disorientation and delirium, and after a variable interval the patient passes into the third stage of stupor or coma

In cases 1 and 2 the second stage was non-existent, the patients were suddenly found unconscious and incontinent with stertorous breathing In case 2 for some hours before the onset of coma the patient was noticed to be delirious and disoriented, and both here and in case 3 there was profuse sweating Gauss (1916) published a series of 14 cases, in 11 of which there was violent delirium in the second stage, followed by coma

The third stage is characterised by increasing coma and the appearance of many and varying neurological signs There may be signs of cortical irritation, such as convulsions, muscular rigidity, and tonic contractures, or paralysis of various groups of muscles and changes in the superficial and deep reflexes, accompanied by loss of sphincter control There is often irregularity of the pupils and interference with the light reflex

In case 1 there were no localising signs and the pupils were small and fixed In case 2 the pupils were equal and active to light to within 6 hours of death At times there was conjugated deviation of the eyes to the left, and other times there would be continuous horizontal movements of the eyeballs The fundi showed nothing abnormal The left upper limb was spastic and the deep reflexes brisk compared with the right side, the abdominal reflexes were absent Since the lower limbs were encased in plaster it was impossible to study the knee-jerks, ankle-jerks, or plantar reflexes In the early stage of coma there was profuse sweating which later disappeared In case 3, 2 hours after the patient was found unconscious, his pupils were equal and active to light, the limbs were held in flexion, the knee jerks were present and the plantar reflexes gave doubtful extensor responses, 3½ hours after the onset of coma he had a definite extensor response on the right and the left was doubtful The fundi showed no abnormality

Cerebrospinal fluid —The cerebrospinal fluid in uncomplicated cases of fat-embolism shows no abnormality except slightly increased pressure, there are few records in the literature of the examination of the fluid

In one of McCarter's (1937) cases the C S F was clear on two occasions In one of the cases reported by Whitaker in 1939 the C S.F was examined and " results were negative " In Watson's (1937) case " normal C S F was withdrawn with no definite increase in pressure " Vance (1934) described one fatal case of fat embolism where the " spinal fluid was bloody," but at autopsy there was a fracture of the left orbit and a small laceration of the brain adjacent to the fracture, as well as typical signs of cerebral fat embolism In case 1 of our series the C S F was normal Case 2 showed slightly increased pressure, the fluid was clear and contained 30 mg of protein and 700 mg of chloride per 100 c cm, no excess of globulin, and two lymphocytes per c mm, the gold test showed no abnormality

Fever —The patients are usually pyrexial, but the temperature may vary from subnormal to 106° or 107° F, and is generally about 103° F Case 1 had a temperature of 101° F for a few hours before he became unconscious and it remained at 101 5° F until his death In case 2 the temperature was 101° F when he was found in coma, and later went up to 103 6° F Case 3 had pyrexia 24 hours before onset of coma—at first 100 6° F and then 101 5° F —and it was 10 days before it came down by lysis to normal

Cardiovascular symptoms —Tachycardia is always present and increases with the pulmonary congestion and cerebral involvement The blood-pressure is usually normal at first, at the onset of symptoms it may be slightly raised, but as the circulation fails it falls In case 2 the pulse-rate was 126 at the onset of coma and then went up to 150, the blood-pressure was 135/80 mm Hg In case 3 the pulse-rate went up to 128, he had slight tachycardia (112–92) for the next 9 days, blood-pressure was 110/80 mm Hg No real investigation has been made of the electrocardiographic changes in fat-embolism and there are hardly any records in the literature Sophian and Scharles (1938) described a case of fat-embolism with radiological changes in the lungs and abnormal cardiac rhythm, in which the first symptoms were severe air-hunger and precordial distress No electrocardiogram was obtained during the height of attack, the first being taken about 24 hours later, " this showed a definite flattening of T2, which became quite positive 24 hours later " The patient made a complete recovery

Hæmorrhages and blood-changes —The skin and mucous membranes often show petechial hæmorrhages at the in the records of the Toronto General Hospital before 1935—the year in which they became interested in the condition—but that by 1939 they had recognised all 12 of the cases reported

McCarter (1937) thinks that a well-fed population, and a rapid increase in motoring accidents and surgical operations combine to force fat-embolism on our notice, and adds that clinicians generally expect it to be diagnosed post mortem and that pathologists often fail to detect it

Vance (1931, 1934) published a comprehensive study of cases seen at routine necropsies at the office of the chief medical examiner of New York He reviewed the results of 246 necropsies in patients who had died as the result of physical injury, giving an account of the ætiology, physical signs and treatment He summarised the causative factors of fat-embolism as traumatic and non-traumatic Traumatic included trauma to the osseous system by *fractures, jarring of the skeleton or* orthopædic operations, and trauma to subcutaneous and intermuscular fat and fatty viscera, including injury by burns He classified as dubious such non-traumatic factors as certain poisons, diabetes, injection of oily substances, eclampsia and childbirth

The greatest number of the traumatic cases follow fractures of the long bones, and especially those of the lower limbs, but the degree of comminution bears no relation to its incidence Few cases have been described where the skeleton was subjected to severe jarring without fracture of the bones

Beitzke (1912) mentions a fall on an amputation stump, Ziemke (1922) a fall from a height, Busse (1913) a heavy blow on the right knee Records of operations on bones and joints have shown their association with fat-embolism with fatal results Lucke (1880) described a case following resection of the hip-joint, Vogt one (1883) following resection of the knee-joint, Kirschner one (1924) following osteotomy Colley (1893), Eberth (1898), Clarke (1927), and Cammermeyer (1937) have described several fatal cases following manipulation of joints Flournoy (1878), Pinner (1883) and Buerger (1915) have described cases where injury to the subcutaneous and intermuscular fat have resulted in fatal fat-embolism

Some cases of burns show fat-embolism at autopsy, but usually it is of minor importance and often attributed to associated injuries The condition has been found, however, in connexion with death from various poisons Groendahl (1911) has discovered it following poisoning by phosphorus potassium chlorate, potassium bichromate, potassium cyanide, and mercuric chloride, but he rather doubted any ætiological relationship between the poisoning and the embolism Diabetes mellitus with lipæmia is alleged to cause coalescence of droplets of fat sufficient to produce fat-emboli, such cases have been described by Fischer (1922), Ebstein (1899), and Saundby and Barling (1882) Graham (1907) states there is no similarity between the microscopic appearance of the intravascular fat in diabetic lipæmia and true fat-embolism Virchow (1886) and Warthin (1913) have mentioned injuries to the pelvic fat at childbirth as possible causes of fat-embolism

Vance in his study concludes that 12–14% of cases of non-traumatic death may show a slight grade of fat-embolism, and that as a result a slight grade of fat-embolism cannot be considered a reliable indication of trauma On the other hand, a severe or moderate grade of fat-embolism is the result of an intravital injury and when demonstrated post mortem is sufficient proof that the trauma occurred prior to death In 59 cases of fractures of the lower limbs which ended fatally within 21 days from the time of injury, he found that 20% had severe degrees of fat-embolism, and in approximately 5% it was the cause of death In 80% of the cases there were no embolic signs, or they were present in only a slight or moderate degree and would not account for the fatal issue

Robb-Smith (1941) analysed the post-mortem findings in 115 accident cases admitted to the Radcliffe Infirmary, Oxford, 35% of the cases showed a severe grade of fat-embolism and in 25% of the cases was " the major fatal factor " He described (1938) a method of examining a fresh specimen of lung which he believes to be the readiest means of confirming the post-mortem diagnosis of fat-embolism

MECHANISM

Much experimental work and many theories have put forward to explain the mechanism of traun fat-embolism (see reviews by Vance 1934, Scuderi and Watson 1937) Blood-plasma normally con 0 2–2% of fat, but in diabetes the blood fat may be 20% The fat is so finely emulsified that the glo pass easily through the smallest capillaries Fat is present in most tissues of the body and in some re it is accumulated in the form of depots or reserves fo elsewhere when required The subcutaneous and renal tissues, the omentum, and the marrow of the bones are some of the usual sites of the fat depots, *there the fat is held in the form of large globules* w the cell-walls of specialised connective-tissue cells writers believe that the depot fat in the marrow o bones is the source of the fat in fat-embolism

Watson (1937) points out that three condition necessary for the absorption of the fat into the circul at the site of injury rupture of the connective t cells liberating the fat, rupture of neighbouring b vessels providing a portal of entry, and some *factor causing the free fat to pass into the circula*

The first two of these conditions are present in fra of the long bones The tissues are lacerated and th in the marrow cells is liberated by the initial injury by subsequent manipulation The fat globules are seen floating in the blood at the site of bone operati compound fractures The blood-vessels are ruptur the vicinity of the injury, the arteries squirt more into the area, thereby increasing the pressure, whil veins remain *open and absorb the liberated fat,* pos by venous suction Gauss (1916, 1924) suggested fat-embolism is more common with fracture than other condition, because the blood-vessels are encase bony wall, hence they cannot collapse as elsewhe the body, but remain open and form a ready port admission for the fatty mixture to the general circula

Fritsche (1910) *found that ligaturing the* veins injured limb did not prevent the occurrence of pulmo fat-embolism and hence suggested that fat may s times enter the circulation by the thoracic duct G also thought that fat was absorbed by the lymph but at a slower rate than the veins, and hence after n fat-emboli from venous absorption, a subsequent fatal of fat might enter the circulation by the lymphatic sys Most authorities believe that lymphatic absorption not play *any* real part in the causation of fat-emboli

After the fat has reached the circulatory system carried along the great veins to the right side of heart, where it mixes with the blood and hence incr its viscosity It is carried to the lungs where s emboli are lodged resulting in *local congestion, œd* and small patches of inflammation These cause i *ference with the pulmonary* circulation and respira exchange, and hence produce dyspnœa, cyanosis a fall in blood-pressure In 25–30% of people there patent foramen ovale (Kaufmann 1911, Thompson Evans 1930, McGinn and White 1936, O'Farrell 1938) in these subjects the emboli may pass direct *from* the to the left side of the heart In the majority of pat the emboli are forced through the pulmonary capillari the systemic circulation and distributed to all par the body Siegmund (1918) noted that this is facilit by any subsequent trauma that might occur to the pat He found that jarring during transport of wou soldiers on *the battlefield undoubtedly forced* the from the pulmonary to the arterial blood-stream *caused syst*emic fat-embolism The brain tissue is n the most vulnerable, and the changes are more ma in the white than in the grey matter, because the art of the white matter are end arteries, and hence the em produce local infarction with areas of necrosis as show case 2 *Usually no great damage* is done to the matter of the nervous system or to the tissues of o organs These sequences of events explain the cli variation in the course of fat-embolism

POST-MORTEM APPEARANCE

Vance has described the post-mortem findings, w are usually as follows

Skin and mucous membranes —Petechial hæmorrhages visible over the upper part of the chest the shoulders splinted immediately, manipulations should be as few as possible, if the condition of the patient permits he should be propped up in bed Stimulants of various kinds have been recommended but their utility is doubtful

The idea of saponifying or emulsifying the fat was first suggested by Czerny (1875) and Wegelin in 1923 advocated intravenous infusion of a 2% solution of sodium bicarbonate Schanz (1910) advised the administration of large quantities of intravenous saline to wash the emboli through the capillaries but subsequent experience does not support any of these therapeutic measures Gold (1927) administered cholalic and desoxycholalic acid but even the smallest doses caused hæmolysis Rappert (1939) injected animals intravenously with Decholin (sodium dehydrocholate) and Eupaverin simultaneously and succeeded in administering many times the lethal fat dose without any ill effects on the animals He has suggested the administration of sodium desoxycholate intravenously in doses of 10 c cm of 20% solution, it must be given very slowly in a drip infusion every 2 hours Robb-Smith (1941) records rapid improvement in the pulmonary condition of one case as the result of a single injection of 10 c.mm but the patient later developed cerebral fat-embolism from which he died This form of treatment is at present only in the experimental stage

Administration of oxygen is helpful. Kolmert (1939) quotes a case of a man aged 25 in whom the condition ran a typical course after a fracture of a leg; the patient became unconscious and as an experiment it was decided to put him in an oxygen tent The effect was a complete surprise—the cyanosis disappeared almost immediately and 3 hours later the patient was fully conscious and felt well The treatment was continued for 4 days and the patient recovered Oxygen can be administered by B L B apparatus so that the concentration of oxygen in the alveolar air would be 80% If facial injuries are present the patient would have to be placed in an oxygen tent.

When systemic fat-embolism has developed the treatment at present is entirely symptomatic

SUMMARY

The clinical course of 3 cases of fat-embolism is described

Fat-embolism is probably a more frequent complication of wounds of modern warfare than is realised If the condition is borne in mind the diagnosis can be made from a careful clinical history and examination.

When the opportunity arises appropriate measures should be taken at autopsy to confirm or refute the diagnosis, and hence more exact knowledge would be attained about its incidence

Many more observations are needed on the morphological, physical and chemical condition of the blood and cerebrospinal fluid, and electrocardiographic and pulmonary radiological changes demand careful study

Further observations should be made on the effect of high concentrations of oxygen, and on methods which will increase the emulsifying power of the blood and hence diminish the size and obstructive power of the fat globules in the capillaries

We wish to thank the Medical Director-General of the Royal Navy for his kindness in allowing us to publish the records of cases 2 and 3, Surgeon Commander R L G Proctor, R.N, for the report of the autopsy on case 2, and Prof D M Blair of the University of Glasgow for the microphotographs

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EVIPAN HYPNOSIS IN PSYCHIATRIC OUTPATIENTS

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Cases of functional nervous disorder encountered in the psychiatric outpatient department fall into five groups. states of anxiety and depression, hysterias, obsessions and psychosomatic disturbances In the majority the psychogenesis is obvious and it is relatively easy to elicit or discover evidence of some acute or long-standing conflict, maladjustment or other difficulty Superficial analysis, discussion reassurance, persuasion and re-education constitute the treatment and usually suffice to re-establish, or adequately correct, the personality or behaviour disorder and thereby remove symptoms of neurotic origin.

In a proportion of patients however, the psychogenesis is obscure and superficial psychotherapy fails to effect any benefit By this I do not mean to suggest that the diagnosis is never in doubt Patients are frequently referred from the wards and other departments of the hospital because subjective symptoms persist in the absence of objective findings, even those of radiological, biochemical and pathological investigations In many such cases the presence of a neurosis is suspected and subsequently identified, but in others the absence of an obvious psychogenic factor, the sound personal and family history and the good personality of the patient tend to exclude such a diagnosis Three reasons can be advanced for failure to ascertain the psychogenesis in a suspected neurotic illness

1 The patient is not suffering from a functional condition
2 The psychogenic factors may be unconscious, that is repressed (unconscious resistance)
3 The psychogenic factors may be consciously withheld (conscious resistance)

Cases falling in one or other of the above groups cannot derive permanent benefit from superficial psychotherapy, and although treatment by hypnosis has been found valuable in certain nervous conditions it is not applicable to neurosis in general Formerly, the only satisfactory treatment for cases in groups 2 and 3 was that of psychoanalysis which, for obvious reasons, could not be under-

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time of onset of the stupor , they are usually present over the upper part of the chest, the shoulders, and anterior part of the neck Groendahl (1911) first described them, and Vance (1934) pointed out that if discovered during life they are an excellent aid to diagnosis He attributed their distribution to the facts that the blood-supply of the areas is derived from the subclavian arteries (which usually receive large number of fat-emboli) and that the dermis in this area is not as fibrous as elsewhere. Similar petechial hæmorrhages have been noted in the conjunctivæ, soft palate, gastro-intestinal tract and bladder The blood-count, if there has been no excessive traumatic hæmorrhage, is normal but usually with the onset of the pyrexia there is leucocytosis up to 17,000 or 18,000 , there are few cases on record, however, where routine blood examinations have been made Sophian and Scharles (1938) mentioned that in their case shortly after the onset of symptoms of fat-embolism there was a sharp fall in the number of red cells and in the hæmoglobin so that internal hæmorrhage was suspected Harris, Perrett and MacLachlin (1939) mention that a profound fall in hæmoglobin may be a valuable point in diagnosis in certain cases

Excess fat in the blood —Scuderi (1938) noted the opinion of several well-known physiological chemists that quantitative estimations of fat in the blood were beyond the ability of the average part-time chemist to carry out accurately, and that even when determinations were done in well-equipped laboratories by trained men the variations were so great as to render them of no real diagnostic value The concentration of fat was also considered to be too small to produce any appreciable variations when examined by physical and spectroscopic methods He then tried dark field examination for fat droplets in the blood, a method first used by Edmunds (1877), and later by Neumann (1907) and by Gage and Fish (1924) This line of investigation may prove to be useful but he gives no records of its application clinically

Renal changes —The kidneys are involved in most cases of fat-embolism, though they sometimes fail to show characteristic microscopical changes The principal lesions are large snake-like emboli filling the capillary coils of the glomeruli, and less often in the vasa afferentia (Vance 1934)

Scriba (1880) first recognised that fat could be excreted in the urine and thought it reached there by a process of filtration into Bowman's capsule through the intact vessel wall Ribbert (1894) said that the fat ruptures the glomeruli and thus gains access to the tubules, or it occurs as the result of secondary degeneration and destruction of the tubular epithelium Scuderi (1934) said that a good amount of fat is secreted through the kidney into the urine and here the small globules of fat can be found in a centrifuged specimen stained with Sudan III, scharlach R or osmic acid Later (1938) he said that detection of fat in the urine is difficult because the droplets of fat float on the surface of the urine and are thus not excreted from the bladder unless the last few cubic centimetres of urine are expressed He concludes that only the last few c cm of catheterised specimens of urine are valuable for examination in cases of suspected fat-embolism , needless to say, oily lubricants must not be applied to the catheter

Radiological signs in the chest may in future prove a valuable aid to diagnosis in fat-embolism, but further investigations of their value are needed

Jirka and Scuderi (1935) published the results of experimental work in dogs and concluded that intravascular droplets of fat if present in sufficient quantity will produce changes detectable by X rays, though in 1938 Scuderi noted that in his experience radiography had never been used in the diagnosis of fat embolism Sophian and Scharles (1938) described radiological changes in the lungs of a patient 5 days after he had sustained a fracture of the right femur and 24 hours after the initial symptoms due to fat embolism The findings were a bilateral acute patchy type of pneumonic change throughout both lung fields , the patches were acute and a confluent type of consolidation appeared on the left side A definite improvement was shown in the radiograms a few days later Whitaker (1939) reported that in one of his cases a radiogram of the chest showed a few patches of consolidation scattered over both pulmonary fields and the general haziness often seen in cases of pulmonary œdema , this was about 40 hours after trauma and 12 hours after the onset of initial symptoms of fat embolism Kolmert (1939) described radiograms in 3 patients taken immediately the clinical picture of fat embolism was definitely established It showed " diffuse patchiness and cloudiness spread over the greater part of both pulmonary fields "

DIFFERENTIAL DIAGNOSIS

The diagnosis is made on the history of injury and the onset of typical clinical manifestations usually within the first 3 days after the injury As a rule there is increasing pyrexia, tachycardia and dyspnœa, with crepitations over the lungs and petechiæ over the upper part of the chest, followed by restlessness, insomnia, delirium, stupor and coma, with no focal neurological signs There will be radiological changes in the lungs, rapid decrease in the percentage of hæmoglobin, and possibly fat globules in the urine

Shock comes on either immediately or within a few hours after injury and is characterised by subnormal temperature, *cold clammy skin and lowered blood* pressure, contrasted with pyrexia, hot moist skin and normal blood pressure in embolic cases

Delirium tremens may be simulated by systemic fat embolism, but there is usually a history of alcoholism and the patient is older , early dyspnœa and pyrexia are not so pronounced and the characteristics of the delirium are helpful in the differential diagnosis

Cerebral complications by direct extension of head injuries in multiple wounds (such as extradural hæmatoma, and acute or chronic subdural hæmatoma) are distinguished by their clinical history, neurological signs and cerebrospinal fluid

Subarachnoid hæmorrhage may resemble systemic fat embolism because of the deep coma and the absence of localising signs The cerebrospinal fluid will decide the diagnosis , it is clear in fat embolism and contains blood intimately mixed in subarachnoid hæmorrhage

Other cerebral lesions —Intracerebral hæmorrhage occurs in older patients and associated with vascular hypertension In some cases signs of meningovascular syphilis may be precipitated by a comparatively slight head injury and similarly cerebral symptoms may be initiated in old people who have medial arterial calcification These conditions will not have the dyspnœa, pyrexia and moist sounds in the lungs in the initial stages

Internal hæmorrhage —The percentage of hæmoglobin and the number of red cells may fall rapidly in some cases of fat embolism, suggesting internal hæmorrhage, but the clinical picture should decide the diagnosis—the pyrexia, and the respiratory rate and rhythm

Septicæmia may be simulated by fat embolism, but the time and mode of onset are usually different Rigors are more common in septicæmia Signs of œdema of the lungs occur early in fat embolism and the petechiæ have a characteristic distribution over the chest and shoulders Cerebral symptoms develop later in septicæmia and are more often accompanied by changes in the cerebrospinal fluid

Bronchopneumonia may closely resemble pulmonary fat embolism, but the physical signs in the latter are those of œdema of the lungs rather than of catarrh of the medium sized and capillary bronchioles with areas of consolidation

Pulmonary embolism (thrombotic) develop later than fat embolism, usually during the second or third week after trauma and generally about the tenth day, and there are differences in the clinical history and physical signs It is well to remember Speed's dictum with regard to the times of onset shock, 3 hours , fat embolism, 3 days , pulmonary embolism, 3 weeks

Blast lung (pulmonary concussion) —In this condition the pulmonary symptoms are present immediately after the injury and the physical signs described are different from those in pulmonary fat embolism They are diminished diaphragmatic movements, emphysematous appearance of the chest, and impairment of percussion rate at one or both bases with or without crepitations In other cases movements may be diminished on one side and the breath sounds obscured by loud rhonchi and scattered coarse râles

TREATMENT

The many suggestions advanced for the treatment of fat-embolism are mainly palliative or empirical. The following prophylactic measures have been suggested by various writers

Unnecessary or rough handling of patients should be avoided , all fractures should be reduced early and in childbirth had been admitted to the mortuary He always worried lest his contraceptive measure should fail him He awaited each of his wife's menstruations with anxiety His attacks consistently arose on the day following coitus

CASE 4 Effort syndrome —Male, aged 29, complained of "terrible palpitations, indigestion and wind" Duration of symptoms 12 months He was the younger son of a farmer in good circumstances and had had a happy and healthy life His father was a man of fine principles and ideals On account of depression in agriculture the patient emigrated to Australia where he successfully established himself as a farmer He gave overwork as the reason for his breakdown A doctor whom he had consulted said he had damaged his heart and he had accordingly returned to his home for care and attention He maintained that he had no worries Physical examination failed to reveal any sign of heart weakness Under evipan he disclosed that as a result of his extravagance in Australia he started to do badly and was compelled to undertake Government contract work of a very arduous nature (clearing bush land) He had established a liaison with the wife of his friend and she had died soon afterwards as the result of an accident One night as he lay in bed thinking of the mess he had made of things his heart started to thump and he thought he was going to die The conversion of his anxiety into a cardiac syndrome enabled him to return home to England without loss of caste

In the 4 unsuccessful cases no additional information was vouchsafed as a result of evipan investigation The first, a patient with fits suspected of being hysterical, was subsequently diagnosed as epilepsy In the second, a case suspected of being hysterical amnesia, failure to recover the patient's memory by means of evipan was later explained by the fact that the amnesia was due to concussion This diagnosis was subsequently corroborated by the appearance of bruising and a hæmatoma of the scalp Cases of amnesia due to concussion cannot be overcome by any known means, but where in addition there is an hysterical elaboration of the amnesia evipan can be used with advantage In the third, a case of dermatitis artefacta, no psychological cause was found and the patient was referred back to the skin department for reconsideration of the diagnosis The fourth was a case of enuresis and was treated by post-hypnotic suggestion with gratifying results

After evipan hypnosis patients are asked to report for the psychotherapeutic application and evaluation of the material disclosed by the analysis This they readily do, for the practical nature of the therapy is appreciated In many cases of gross hysterical disability—such as amnesia or paresis—a single evipan administration has succeeded in removing symptoms or recovering function without the aid of psychotherapy Herein lies the importance of keeping the patient as lightly narcotised as possible, thus enabling him subsequently to recall the information disclosed during the administration or to witness restoration of function Orthodox analysts may insist that such therapy is purely a covering one, that the benefit is transitory and relapse inevitable Even if this were true, the prompt removal of neurotic symptoms is valuable therapy and tends to preclude the fixation of symptoms and the development of secondary symptom elaboration, cases of which exhibit a resistance to treatment directly proportional to their duration Patients are naturally asked for their permission before an evipan investigation is undertaken In only one instance was this refused, the patient concerned being a prostitute

A follow-up of the 22 cases who replied to an inquiry from 6 to 18 months after their last attendance gave the following result —

Free from symptoms	11	Under other care	1
Improved	6	Unchanged	4

(Of the 4 "unchanged," 3 failed to return after the first attendance)

Freedom from symptoms for such a short period cannot be regarded as necessarily indicating recovery, but the fact that 11 patients remained free from symptoms demonstrates the value of the method Treatment by direct hypnosis was used extensively with good results during the last war but was naturally restricted to those patients who were hypnotisable, a relatively small number By using evipan, however, 95% of patients can be narcotised, and as there is no practical distinction between the hypnotised and the narcotised patient there seems to be a good case for the wider application of evipan narcosis

SUMMARY

Evipan analysis is a useful and rapid method of investigating cases of suspected neurosis in which no obvious psychogenic factor has been discovered or elicited by other methods

Should the psychogenesis become apparent the hypnotic state induced by evipan is useful for treatment Synthesis and interpretation may be attempted during the preanæsthetic or posthypnotic phases depending on the reaction of the patient to the drug

Failure to identify the psychogenic factor by this means tends to rule out a diagnosis of neurotic illness

A single dose of evipan has frequently restored function in cases of hysterical amnesia and paresis without the aid of psychotherapy

I am indebted to Dr D Curran, psychiatrist to St George's Hospital, for giving me opportunities to apply this method and for his advice and criticism

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Medical Societies

ROYAL ACADEMY OF MEDICINE IN IRELAND

AT a meeting of the Section of Obstetrics on March 14, with Dr R M CORBET, the president, in the chair, a review of some of the

Causes of Maternal Death shortly after Delivery

was read by Dr J C GALLAGHER This was based on the deaths from hæmorrhage and shock in the Dublin maternity hospitals during the past five years Only a few deaths were directly due to hæmorrhage, so that the majority could be included under the heading "obstetric shock" as defined by Sheehan There were 52,000 deliveries with 248 deaths, 74 of which were due to shock and hæmorrhage A careful study was made of these deaths to find if there was any commonly recurring factor Anæmia was the main factor in 6 deaths and an important factor in 8 others The remedy is more widespread antenatal care and better all-round nutrition among the poor Antepartum hæmorrhage was a factor in 25 cases—12 patients died of shock due to abruptio placentæ, external accidental hæmorrhage was responsible for 5 deaths, and the bleeding of placenta prævia for 8 Both transfusion and section received fair trial in these patients The fatality of manual removal of retained placenta was 11–15% ; there were 30 deaths after this operation, 5 of them from sepsis Death was apparently due to shock in 25 of the cases of manual removal , in 18 of these there was *no postpartum* hæmorrhage and the second stage was normal The use of plasma transfusion might better the results Crede's expression and intracordal saline were associated with 2 deaths each Postpartum bleeding occurred in 22 cases and was severe in 6 Among the deaths there were 7 cases of cæsarean section, 19 of forceps delivery (5 failed forceps), 6 of craniotomy, 9 of version and 1 of breech extraction There were 7 cases of ruptured uterus and 1 of acute inversion In conclusion Dr Gallagher said that many of these patients were admitted in a moribund condition so that the mortality will only fall when many problems outside of the hospitals are settled

Dr BETHEL SOLOMONS said that, with few exceptions, the term "obstetric shock" as a cause of death should not be used As a rule it meant that the obstetrician did not know the cause Research aiming at lowering the mortality from these diseases would be hampered if statistics showed that shock was the cause of death and not the disease itself Although there might be a rare unexplained fatality, most could be determined after thorough investigation He regarded manual removal of the placenta as a failing of the junior obstetrician. As more experience was acquired, the number of removals would fall, and with it the morbidity and mortality taken in the outpatient department of a large general hospital It was felt that some treatment was required intermediate between superficial psychotherapy and orthodox analysis, and some kind of investigation to explore the psyche a little more deeply than the former and render unnecessary the frequent attendances and duration of the latter

The barbiturates can be adapted to fulfil these requirements In suitable dosage a selective action is exercised on the cerebral cortex causing a clouding of consciousness and corresponding depression of the highest centres responsible for criticism and discretion Conscious resistance is thus overcome, inhibitions are removed, and the emergence of forgotten or unconscious material is facilitated whereby obscure psychogenic factors may become apparent Hearing and speech are not greatly affected and patients are therefore converted into calm and confiding subjects willing to express the most intimate details of their personal history Further, a heightened degree of suggestibility can be maintained and a sort of artificial hypnosis is obtained in patients otherwise resistant Such a technique is useful for the deeper exploration of the circumstances which have precipitated a breakdown and also to facilitate a suggestive form of therapy

Horsley (1936), using a 2½% solution of Nembutal, found the resulting willingness of the patient, the release of inhibitions and the ability to recall experiences recent and remote made analysis relatively simple and speedy In an hour the physician could obtain a quantity of relevant information which he would not have obtained in a month by ordinary methods Using a 10% solution of Evipan Sodium I arrived independently at almost identical conclusions (Stungo 1938) Sargant and Slater (1940) found that lost memories could be quickly and conveniently recovered by giving up to gr 7½ of Sodium Amytal by graduated intravenous injections Dicks (1940) states that following anæsthesia with evipan and Pentothal patients display a suggestible euphoric state which is very suitable for psychological investigations With the precautions he adopts these drugs are rendered safe even with outpatients The method sometimes yields surprisingly rapid insight into depth mechanisms which are entirely forgotten by the patients in their normal state Campbell (1938), using a 10% solution of evipan sodium, successfully recovered memory in cases of hysterical amnesia I use a 10% solution of evipan sodium, although equally satisfactory results have been obtained with its equivalents—Sodium Soneryl, Narconumal, Hexanastab and Hypoloid soluble hexobarbitone

TECHNIQUE

The drug is administered by intravenous injection and 10 c cm is considered an adequate maximum for one investigation The subject is asked to count numbers from 50 in reverse order The solution is injected (approximately) at the rate of 1 c cm per min and that rate is maintained until the patient exhibits some confusion, skips numbers or starts counting in normal progression This point is reached after 1–3 c cm have been injected depending on the age, stature, constitution and resistance of the subject Coincidentally the patient may complain of feeling " muzzy," usually licks his lips and relaxes Any tendency on his or her part to fall asleep should be circumvented At this point the injection should be interrupted but the needle of the syringe is kept in position, danger from the formation of small thrombi is negligible The investigation can be initiated either by attention to the patient's spontaneous observations or by active questioning on the part of the physician The pre-anæsthetic state is maintained by injecting at the same slow rate just enough of the solution to maintain that state

The patient, released from inhibition, may discuss items, incidents or reactions which in normal consciousness were denied, suppressed, distorted or evaded From time to time repressed material is spontaneously expressed In the absence of spontaneous speech conversation should be encouraged by asking simple questions In this way rapport is established Diction should be clear and deliberate, the phraseology short and simple Once initiated conversation is readily maintained and items of importance and significance can be discussed Drug addicts and alcoholics require relatively larger quantities of the solution The degree of response to the barbiturates depends also on the intellectual, cultural and social qualities of the patient Should strong resistance to questioning be encountered it is advisable to anæsthetise the patient with the minimal anæsthetic dose When signs of returning consciousness appear efforts to engage the patient in conversation should be renewed and are frequently successful Should the investigation be negative the post-hypnotic period of heightened suggestibility can then be utilised for purposes of positive suggestion, persuasion and re-education When positive results are obtained, the post-hypnotic period is also useful for synthesis and interpretation reinforced by suggestion and persuasion. In the event of abreaction (release of emotional tension) being excessive, the patient can be anæsthetised and allowed to sleep off the effects of the barbiturate In such circumstances he would have no knowledge of any disclosures confessed or recalled under the influence of the drug An attempt to negotiate the episode associated with excessive abreaction can be made at a subsequent session The repeated administration of barbiturates in this way does not lead to addiction or other harmful effects Idiosyncrasy is rare and contra-indications—such as advanced cardiac, pulmonary hepatic or renal disease—few The effects of the drug pass off quickly and patients are quite capable of leaving the outpatient department or consulting-room, if necessary unescorted, after a rest of two or three hours One nurse can provide all the necessary assistance required during the administration

CASE-RECORDS

Of 208 patients referred to the psychiatric outpatient department of St George's Hospital, 40 (19 2%) were selected for evipan investigation In 36 of these the previously obscure psychogenesis became clarified and the diagnosis (of neurosis) was verified as a direct result of the evipan administration The following abbreviated reports of 4 typical cases illustrate the value of the method in overcoming resistance so that the physician can obtain that additional information relevant for adequate understanding and treatment of the patient

CASE 1 Conversion hysteria —Female, aged 22, complained of " terrible pain under the left breast," duration 6 months, onset sudden She was the eldest of five, had a happy childhood and a good work record She was married, had one child aged 3 and she stated that she was quite content and free from worry Her previous health had been good She thought her heart was bad Evipan investigation revealed that 6 months previously she had syringed with a whirling spray in an attempt to terminate a suspected pregnancy She had inserted the nozzle until it caused her pain She fainted and believed that she had injured her heart

CASE 2 Anxiety state with compulsive features —Female, aged 28, complained of vague fears, a feeling that she was going off her head, unwillingness to handle a knife because of the impulse to cut her throat, restlessness and inability to concentrate Duration of symptoms 6 months, onset sudden She was the fifth of six siblings, the family and personal history were good She had a happy childhood, did well at school, had a number of jobs, and was never sacked She had been married 5 years to an engineer, was disappointed that she had no family, but was otherwise content She could in no way account for her symptoms Under evipan hypnosis she expressed resentment against her mother in law and stated that she would like to creep up behind her and knock her out Constant references by this woman to a former rival were disturbing and distressing to the patient The symptoms had come on suddenly when she was reading police court reports in a newspaper

CASE 3 Anxiety state —Male, aged 27, a mortuary attendant, complained of fortnightly attacks of giddiness, headache and weakness in the legs which would come on suddenly while he was at rest Duration 3–4 months He was the second of six children, his family history and previous health were sound There were no early neurotic traits, he had a happy childhood and a good school record He had been in his present job for 2 years, had been married for 20 months, practised coitus interruptus, had no family and was quite content His attacks lasted for two or three hours and he had no idea to what they could be attributed Under evipan hypnosis he discussed his fear of impregnating his wife, which sprang from the fact that several women who had died

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He was surprised to hear that cæsarean section was still often done for concealed accidental hæmorrhage, for conservative measures gave better results He asked if many of the manual removals were done for primigravidæ, for a really adherent placenta rarely occurred at a first birth If pituitary extract were given after the placenta was delivered pituitary shock would not occur He hoped that the injection of submammary saline was still taught for district work

Dr T M **Healy** agreed with Dr Solomons that obstetric shock was rare, but this fact did not get the obstetrician out of the difficulty of defining the condition from which the patient died Dr Gallagher in his paper had not mentioned the word trauma or injury at all He thought that a great many of Dr Gallagher's cases were due to traumatic shock During his period as master of the Coombe Hospital he had tried in the annual reports to avoid using the term obstetric shock as far as possible, but it was exceedingly difficult to know what some of these patients died from Obstetricians would welcome an explanation of why when patients bled into their tissues, or into the peritoneal cavity, they got into such an extraordinary state of collapse after such a small hæmorrhage

Dr O'Donel **Browne** said that obstetric shock undoubtedly existed as a very terrible clinical entity, and he stressed the necessity for sharp distinction between it and the collapse or shock which supervened in the presence of excessive bleeding In the production of shock ill health prior to the confinement, prolonged labour, misapplied obstetric operations and bad obstetrical judgment, with exposure to cold and long anæsthesia, were all important, but of themselves they would be unlikely to precipitate the condition unless some tissue damage took place concurrently He maintained that judicious use of posterior-pituitary preparations was a great asset in the treatment of shock His own experience of traumatic postpartum hæmorrhage did not include a single case where suture was necessary to control bleeding from a torn cervix. He had seen several cases in which the cervix had been badly torn, and this raised the question in his mind as to whether the cases treated by cervical suture were not in reality examples of incomplete uterine rupture

Dr A **Spain** said that many of these patients died from shock which was in no way different from shock due to other causes In describing these cases it was necessary to use the word shock, but it was not necessary to use the word obstetric He thought that manual removal of the placenta should often be done earlier than it was He had had fatalities as a junior obstetrician by waiting too long

Dr. F W. **Doyle** had recently seen a patient who died of what in his opinion was obstetric shock She was seven months pregnant and the fœtus had been dead for about a fortnight He had been called suddenly to see her, and when he arrived found that she was dead

Dr E A **Keelan** felt there must be a small group of maternal deaths which had their inception in the first stage of labour This applied particularly to primiparæ, who, through want of adequate rest and sleep in the first stage, or on account of being given unsuitable food which provoked vomiting, or as a result of directions given by the nurse to bear down long before the os was fully dilated, became so fatigued that the second stage had to be terminated prematurely A difficult forceps extraction might lead to profound shock in such a patient, a superadded small hæmorrhage in the third stage might sometimes cause death

Dr D F **Hanley** was of the opinion that shock must be looked on as a secondary condition following some primary damage

The **President**, from a study of the records of the Coombe Hospital for the last five years, suggested that patients who died shortly after delivery could be grouped into three classes (1) patients suffering from organic disease associated with pregnancy (9 deaths), (2) patients suffering from some grave abnormality of the pregnancy itself (8 deaths), and (3) patients who had no complications prior to the onset of labour (1 case of hæmorrhage from rupture of the uterus, 1 case of pulmonary embolus after spontaneous delivery, and 4 cases of obstetric shock) The term obstetric shock should be strictly reserved for those who have an atraumatic delivery, and who develop shock and collapse without postpartum hæmorrhage He had seen a multipara have a rapid spontaneous delivery unaccompanied by any hæmorrhage, go into a state of collapse in a few minutes, and in spite of every endeavour, including blood transfusions, remain in this collapsed state and die The placenta in this case was retained, and was manually removed as part of the exploration of the uterus to determine that internal hæmorrhage was not taking place He pointed out that manual removal of the placenta was undertaken in two very different types of case In the first, postpartum hæmorrhage due to partial detachment of the placenta, provided the bleeding had not been severe and prolonged, manual removal was not in his experience associated with any mortality On the other hand, in a patient who had developed shock without any adequate hæmorrhage to account for it, manual removal was associated with a high mortality, but he was not satisfied that this mortality would be improved by leaving the placenta in situ in these patients when their shock was becoming progressively worse He agreed that manual removal of the placenta should be reduced to a minimum, but he thought that the real exhibition of judgment lay in doing it in time He agreed that many of the cases put down as obstetric shock died of operative trauma

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Reviews of Books

Practical Orthoptics in the Treatment of Squint

(2nd ed) By **Keith Lyle**, M D , M Chir Camb , M R C P, F R C S , assistant ophthalmic surgeon, King's College Hospital , and **Sylvia Jackson**, senior orthoptist, Royal Westminster Ophthalmic Hospital London H K Lewis and Co Pp 341 15*s*

Orthoptic exercises in the treatment of strabismus and some forms and degrees of ocular-muscle imbalance have excited interest for several years As with many new therapeutic measures its initial stages were marked by the enthusiasm of its protagonists and the condemnations of those who doubted its value The passing of time, careful observation and cold judgment have helped to define its proper place in ocular therapeutics Much of the routine work in this field both in hospital and private practice is done by young women of school certificate or matriculation standard who have studied in an orthoptic clinic of one of the hospitals for one year and have passed an examination recognised by the Orthoptic Board This book is a sound practical contribution to the subject written by an ophthalmic surgeon and an orthoptist who have worked in a large orthoptic department The second edition has incorporated some notes on the ætiology of strabismus taken from Bernard Chavasse's recently published edition of Worth's " Squint " In the chapter on instruments there is a description of Livingston's rotating stereogram and some of his ideas are set out in the chapter on heterophoria A new chapter on adult cases of squint has been added, and the chapters on paralytic squint and ocular torticollis have been enlarged The " standard of cure " approved by the Orthoptic Board is used The appendix gives an outline in tabular form of all the cases seen and treated at the orthoptic clinic of the Royal Westminster Ophthalmic Hospital during 1938

Text-book of Ophthalmology

Vol III *Diseases of the Inner Eye* By Sir **Stewart Duke Elder**, D Sc , M D St And , F R C S , ophthalmic surgeon to St George's Hospital, London London Henry Kimpton Pp 3470 £3 10*s*

Volume III maintains the high standard of its predecessors In these days such large compilations are generally the work of multiple authors but in this case a single writer has abstracted information from a large contemporary literature in several languages and set it out concisely and lucidly , this makes for continuity of style and an absence of overlapping The volume covers diseases of the uveal tract, the retina, optic nerve, lens and vitreous , glaucoma and hypotony and intra-ocular parasites The illustrations of the external manifestations of ocular disease, fundus paintings and microphotographs of morbid histological material are well chosen and good

THE LANCET

LONDON SATURDAY, APRIL 19, 1941

SHARING THE BURDEN

It is not surprising that in these days of talk about conservation of man-power comparing eyes should be cast on all sorts of medical activity, and general practitioners will welcome the Minister of Health s circular summarised on another page, in which he recognises that private practice has already been seriously affected by the calling-up of its younger members and suggests means whereby hospitals and the public-health service can help to supply the future needs of the Forces At the same time it is good reading that the three Service departments are reviewing their own medical establishments and that a similar process is taking place in the E M S The unexpected calm in which a large proportion of medical members of the Forces and of the E M S have passed the first eighteen months of the war has no doubt led to discontent both among themselves and among those doing their work at home Some young doctors in the Army have felt that they were wasting their time in an unscientific and uncomfortable world while their colleagues were gravitating into the comparative luxury of hospital life with its greater prospect of scientific work Some of the doctors in hospital service on the other hand, have found themselves short of clinical material, and many of them would gladly join the Army if they could, especially if they felt there was enough work there for them The mechanism for adjudicating on the claims of the different services has, perhaps inevitably left some bitterness, but the real difficulty has lain in the circumstances of the times

The increasing needs of the different theatres of war must entail further calls from time to time on civilian doctors liable for military service, and the aim must be to explore every other source of supply before depleting private practice below the borderline of safety As the Ministry of Health suggests, local authorities may be able to release a certain number of the younger members of their medical staff by pooling their public-health services by making full use of women doctors for maternity and child-welfare work, by appointing general practitioners to part-time posts, and by ensuring that no medical man is doing work which could be done by a layman Hospitals can help by enrolling foreign doctors made available by the Medical Register (Temporary Registration) Orders, by "upgrading" some of the 2500 final-year students who under supervision can well undertake (as they did in 1917–18) the duties of junior house-officers, more particularly on the surgical side, and by reducing to a minimum the numbers of young doctors holding A B2 and B1 posts while being ready to lend or borrow medical staff in an emergency

The emergency hospitals have to decide how much staff is necessary to deal with the basic minimum of clinical material in quiet periods while providing sufficient elasticity to enable the staff in periods of peak load to carry on until adequate reinforcements arrive Experience has shown that only use can preserve the resources of a hospital in the state of preparedness in which it can cope with a sudden rush of work Probably the ideal is during a lull, to have these hospitals functioning up to half their capacity, either by drawing patients from the Army or by providing hospital treatment for the civilians who would benefit from it but cannot get it under present conditions On this basis a 600-bed unit with 300 beds occupied will require one senior and one assistant surgeon, one skilled anæsthetist one senior physician, and at least one other assistant primarily a physician but able to assist with surgical work during an emergency One house-officer will be needed for each hundred occupied beds, three in all Apart from the medical superintendent the medical staff will therefore total eight, with calls on the part-time services of a radiologist and consultants for special types of case This seems to be the bare minimum if the hospital is to be ready to admit and treat at short notice 300 severely wounded people A staff of this size will be in no danger of deteriorating from lack of work if the 50% quota is maintained Apart from strict economy in numbers more might perhaps be done by selecting for the E M S the physically unfit, those boarded out of the Army on medical grounds and even the over-age, but hospitals prepared to do major emergency work require a certain nucleus of fit and active staff, and the Army has itself expressed a desire that as many young graduates as possible should undergo a period of training in such hospitals as a preliminary to military service

INFECTION FROM DUST

That many pathogenic bacteria can remain viable for days outside the body has been known since Kirstein s[1] original work but discoveries that come before their time are apt to be lost and forgotten Flügge s doctrine, promulgated at the beginning of this century, that respiratory infections are spread directly by moist droplets with an infecting range limited to 3–4 feet became generally accepted, and only recently has spread of infection by air-currents to greater distances been resuscitated as a probable alternative route The relative importance of droplets, droplet-nuclei (very small infective particles suspended like smoke in the air) and dust in carrying infection is now under active investigation Bloomfield and Felty[2] showed some years ago that patients suffering from scarlet fever and tonsillitis were unable to infect blood-agar plates held a foot in front of the mouth while the patient talked, laughed or coughed Following up this work and using a series of five plates arranged on the quadrant of a circle so that the top plate was in horizontal line and the bottom plate in vertical line with the patient s mouth at a distance of a foot, Hare[3] found that streptococcal throat and nose carriers speaking or coughing in a horizontal direction expelled few organisms on the upper two plates and increasing numbers on the lower plates of the circle Colonies of hæmolytic streptococci were scantily present on the plates in only 4 of 12 carriers tested, and appeared most often on the intermediate plate of the series (angle of 45°) Tests with the Wells air-centrifuge failed to show hæmolytic streptococci in the air

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[1] Kirstein J *Z Hyg InfektKr* 1902 39 123

[2] Bloomfield, A L and Felty, A. R *Bull Johns Hopk Hosp* 1923 35 115

[3] Hare R *Canad publ Hlth J* 1940, 31, 539

AT THE MENOPAUSE

"High Doses of Oestrin are usually unnecessary, at any rate for the commoner menopausal symptoms—such as vasomotor disturbances — and consequently oestrin injections are, fortunately, seldom required It has been my practice to begin with doses of about 500 I U daily by mouth If this does not control the symptoms the dose is raised to 1,000 . this is usually completely effective. There are, of course, certain more severe sequelæ of the menopause, which demand much higher doses Pruritus, Kraurosis, Leukoplakia vulvæ, fall into this class and, provided sufficiently high doses are given, the results are little short of miraculous"

PROC ROY. SOC MED Vol XXIX. Page 1094

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EPEAL OF THE MEDICINE STAMP DUTIES

In his budget speech in April 1939, Sir JOHN
MON surprised all parties in the House by announcing
at he proposed to repeal the medicine stamp duties
ecause they had become administratively unworkable,
ut the opposition to what was generally regarded
a retrograde step was so forceful that the Chancellor
ter decided to refrain from taking it. Now Sir
INGSLEY WOOD has revived his predecessor's
roposal, though he implies that between now and
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ill be introduced to apply some other form of
ntrol to "maintain a fair balance between the
terests of the pharmacists and of other vendors."
his follows his undertaking, made last August when
he Finance (No. 2) Bill was being considered in
ommittee, to get the parties together and hammer
ut some reasonable solution, the parties referred to
eing the Proprietary Association of Great Britain,
he National Pharmaceutical Union, the Scottish
harmaceutical Federation, the Wholesale Drug
rade Association and the Pharmaceutical Society of
reat Britain. It seems fair to assume that some
easonable solution has been found.

The medicine stamp and licence duties go back to
783, and it is clear that the original legislation,
lthough primarily an excise measure for raising
evenue, was also intended to protect the public from
he dangers arising from the indiscriminate sale of
edicines. The tax was twofold, as it is today. It
as imposed on all persons who sold medicines and
ere not regularly bred to the profession of doctors,
pothecaries or the like, and secondly a duty was
aid on the medicines themselves when sold by such
persons. By exempting the persons who are now
epresented by registered chemists and druggists and
he medicines sold by them the House of Commons
f that time showed in no uncertain way their desire to set up a signpost directing the public to the trained vendor for their medicines. That principle has been confirmed in every subsequent act relating to the sale of medicines. There can be no doubt that removal of the duties without offsetting legislation would encourage those abuses which Parliament a hundred and fifty years ago hoped to discourage, and this is no time for helping the sale of secret remedies, or indeed for encouraging the sale of any medicines beyond the needs of the community.

It is true that the law as amended by various acts since the passing of the original one has given rise to anomalies contrary to common sense—the Chancellor describes it as a museum-piece of administrative complexity—but that is not a sound reason for scrapping an important principle, as the Chancellor of course recognises. It will probably be found when the new measures are introduced that they will reserve to qualified persons their present right to sell medicines recommended for specific purposes, but that they will not interfere with the practice by which ordinary shopkeepers may sell drugs which do not bear recommending labels or instructions as to dosage. When the bill comes before Parliament other interested parties besides those mentioned may well demand consideration, so that the bill may yet be a controversial one. The Government, however, is pledged to give the chemists a measure of compensation if the duties are repealed, and if that measure of compensation has not been translated into law by September the repeal is likely to be postponed. No doubt many pharmacists would like to press for the reservation to qualified persons of the retail sale of all medicines, whether "recommended" or not, but they should reflect that it was an attempt by physicians of a hundred years ago to prevent chemists and druggists from recommending medicine for gain which brought the Pharmaceutical Society into existence.

Annotations

MENTAL DISEASE IN A GENERAL HOSPITAL

PSYCHIATRY is the most nearly related to sociology of all the branches of medical science, and mental disorders in general can be regarded as the meeting ground of social and cultural affairs on the one hand and the human organism on the other. It has always been desirable that psychiatry should be as closely in contact with general medicine as possible, and there is no better way to this end than to arrange for mental disorders to be treated not in relative isolation but in the same institutions as physical ones. The York Clinic—the building of which at Guy's Hospital had been contemplated for some years before the war and has now been completed in spite of it—is the first psychiatric clinic in the country to be erected in the precincts of a great teaching hospital and to form an integral part of it. The part played by mental processes in many apparently physical complaints (the psychosomatic disorders) is increasingly recognised, and recent advances in the treatment of psychotic conditions have turned early treatment from a pious gesture to a practical act. The so-called stigma which is still attached to psychotic mental illness should be largely erased by a conjunction of general and psychological medicine, especially when treatment can be given from beginning to end within a general hospital, to which admission is as free and informal as in the case of physical diseases.

The building is of a pleasant modern type embodying the wide experience in hospital architecture of two firms,[1] as well as the special experience placed at their disposal by the Board of Control through their architect. It is designed to accommodate 42 patients, mainly in single rooms. The fact that many patients, being ambulant, will use the common rooms of the clinic as their home has made it desirable to provide as much day-space as possible. The ground floor is occupied by public rooms and offices, while the basement, in addition to a laboratory, contains the gymnasium and dining-room. The first floor is intended for the reception of psychoneurotic and psychopathic patients; the two middle floors are designed for the milder type of psychoses, are self-contained, each with an occupation room and a lounge. The top floor is reserved for the acute psychoses which require close nursing supervision. The roof provides both covered and open space. The anonymous donors operating through the York Trust have provided not only the building but a sum for limited endowment as well, partly in the hope that the clinic may start immediately after the war with a nucleus of free beds; these will supplement the half-dozen provided by the governors some years ago in the general wards for similar purposes. But most of the beds will be for paying patients at various rates since the clinic is to be nearly self-supporting. A part of the site has been generously provided by Lord Nuffield; the rest has been leased from the medical school.

The clinic will benefit the students, who are to share fully in its work; they will be able to coöperate in the inpatient treatment of all varieties of psychological expired horizontally from the mouth From his results, Hare concluded that streptococcal carriers transfer infection, not directly by droplets or droplet-nuclei but by large infective particles, which, falling on floor or bed-clothes, become dried and are carried into the air again with bed-making and sweeping The large numbers of diphtheria bacilli[4] and streptococci[5] found in the dust of wards lend support to this view, and in his letter of April 12 (p 493) Cruickshank demonstrated clearly the increase in aerial streptococci after bedmaking and the usual ward disturbances It is difficult to prove that infected dust actually produces clinical infection Opponents of this view might say that in the dried state these pathogens are so emasculated as not to be able to initiate infection But guineapigs placed in the exhaust tunnels of sanatoria have developed tuberculosis, and instances of infection from dust have been recorded—there was the person who after sweeping out a cubicle vacated five days previously by a patient with streptococcal puerperal infection developed tonsillitis due to a streptococcus of the same serological type[6] Macgregor[7] described an outbreak of puerperal sepsis which necessitated closure of the ward and which flared up again when the ward was reopened with a new nursing staff Such an occurrence and the outbreaks of puerperal sepsis described by Cruickshank and Godber[8] are at least strong circumstantial evidence of the infectivity of dust In the disinfection of wards care must be taken, as White[6] showed, that formaldehyde fumigation is carried out thoroughly, or, if washing-down is preferred, that dust high up on window-ledges or lampshades is removed (see Dr Glass's letter, page 524) Aerosols and ultraviolet light are relatively ineffective here To minimise the amount of dust and prevent its dissemination in the air, blankets may be treated with liquid paraffin and floors with spindle oil[9] , the oil should be sparingly applied with a mop after all polish has been removed with soap and water, and fresh application made every 2, 3 or 4 weeks as required But infected dust can be a vehicle for the spread of infection by the hardy pathogens only it does not solve the problem of the transmission of cerebrospinal fever and other infections whose materies morbi cannot live for long outside the animal body

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[1] Messrs. Thompson and Walford and Messrs. Stanley Hall, Easton and Robertson.

THE CASE FOR MASS RADIOGRAPHY

It can now be considered as established that a large number of adults (probably about 1%), who are free from signs or symptoms, present radiological pulmonary lesions of sufficient significance to make it inadvisable to accept their services either in the fighting forces or in industries working under the full pressure of war effort The expense of mass radiology of millions of people would be considerable, but that the cost of failing to carry out such a survey is probably much greater is suggested by the experience of the firm of Phillips of Eindhoven, who found the cost of 100,000 radiological examinations to be little *more than a third of the consequent* saving in pay, treatment and pensions which followed a 7 diminution of the incidence of tuberculosis in tl employees In a recent paper, prepared for presidential address to the Faculty of Radiologi Shanks[1] discussed the three possible methods mass radiography Full radiological investiga although the most accurate, is ruled out on gro of expense Screen examination alone is labo for the radiologist and provides no permanent re Miniature photography of the screen image is i view the method of choice, for it is inexpensi materials and quick , at least 100–200 cases per can be photographed with one apparatus It be carried out by a lay technician, and forn permanent record that can be studied at leisur the consultant The accuracy of miniature compared with full-size films has been the subje recent studies by Douglas and Birkels[2] and Clark and his colleagues,[3] who conclude that margin of error is so slight that not more than 1- of lesions, and these of minimal dimensions, woul missed by the miniature method It must remembered, too, as Kayne[4] has lately reminde that even full-size radiographs may miss lesions w are in awkward situations Fears have been expre lest over-diagnosis and the branding as tubercu of cases with insignificant apical scars should r from this method of investigation, but it shoul realised that a positive finding on a minia radiogram is merely an indication for full radiolog and clinical investigation, the result of which w be the separation of these cases into three grou (1) shadow of no clinical importance , (2) ac disease requiring treatment , and (3) cases requi observation, which should be temporarily reje for service or employment involving heavy str but need not be notified or treated as tuberculous

The entire Royal naval personnel are now b examined by miniature radiography every two three years, suspects being re examined witl full-size film This welcome information was g by Sheldon Dudley, director-general designate the R N M S , at a meeting of the section epidemiology, R S M , reported in our last is (p 481) Of the first 18,000 men examined (a cost of less than 1*d* each) about 100 were conside suspicious on the miniature radiogram, but a full film and observation in hospital reduced this num to 47, who were finally diagnosed as active invalided out Here, then, routine miniature rad graphy removed 2 sources of infection from e 1000 men examined In these times of strain, wl an increase in tuberculosis is to be feared, the ar ments in favour of an extensive use of mass rad graphy are overwhelming With early diagnosis can now anticipate the arrest of the disease in majority of cases , the spread of infection, facilita by blackout and shelter life, can be reduced addition to these advantages it should be brou home to the authorities that besides increas service and industrial efficiency each pound spent such a scheme might be expected to save three poun

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[4] Wright, H D , Shone, H R and Tucker, J R *J Path Bact* January, 1941, p 111

[5] Thomas J C *Lancet* March 29, 1941, p 433

[6] White E *Ibid* 1, 1936, 941

[7] Macgregor, A S M Puerperal Infection in Maternity Hospitals, Edinburgh, 1930

[8] Cruickshank, R and Godber, G E *Lancet*, 1939, 1 741

[9] van den Ende, M , Lush, D and Edward, D G ff *Ibid*, 1940, 2, 133

[1] Shanks, C *Brit J Radiol* February, 1941, p 45

[2] Douglas, B H and Birkels, D C C *Amer Rev Tuberc* Janu 1941 p 96

[3] Clark, D K C , Cordiner, G R M and Ellman, P *Brit Radiol* February, 1941, p 51

[4] Kayne, G G *Lancet*, Feb 1, 1941, p 113

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The clinic will benefit the students, who are to share fully in its work, they will be able to coöperate in the inpatient treatment of all varieties of psychological illness, excluding those requiring certification, and to share in the treatment of adults and children in an outpatient department which before the war was one of the busiest of its kind in the country Patients will come more readily at an early stage of their illness to a general hospital, and will have the advantage of easy access to first class facilities in the other branches of medicine provided by a teaching school The risk incurred in completing the building now will be well justified if, at the end of the war, it is able to begin its work at once

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[1] Messrs Thompson and Walford and Messrs Stanley Hall, Easton and Robertson

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THE use of narcotic drugs to discover what a patient cannot communicate because of hysterical and other psychological disturbance is not new, any more than is their use to discover what a suspected delinquent will not disclose In neither instance can they be relied on, the patient or the criminal may keep his secret, or perhaps the story he tells while under the influence of the drug is a misleading fantasy But it is not merely as an aid to mental exploration, a solvent of amnesia, that the narcotic method has its modest place in psychiatric procedure It may be employed, as Dr Stungo on p 507 shows, much as hypnosis may be employed Indeed, it was as a device for making hypnosis easier in resistant subjects that narcotic drugs entered this field It is widely recognised that drugs, and especially placebos, can have a suggestive effect far more important than their pharmacological effect, and if a drug is used that, when given by injection, induces drowsiness and is preceded by the creation of an expectancy of "cure" in the patient corresponding to the confidence of "cure" in the doctor's mind manner, the suggestive effect can be therap powerful That there are drawbacks and even needs no emphasis Psychogenic factors disclosed be irrelevant or fantastic, the catharsis trivial, t patient's misunderstanding of his illness or his sympt all the greater, "narco-analysis" is not a treatment itself but a technical aid to the carrying out of a regul psychiatric treatment whether it be brief or re educative or purely suggestive The method is, short, not one for indiscriminate use by those w th psychiatric training It is also important that the effect of narcotic and other drugs in mental disorder borne in mind It was, for example, the effect of So Amytal on schizophrenic stupor that first made this d conspicuous in psychiatric work Yet none would be hardy as to suggest that this effect of amytal irrespective of its pharmacological action or had an to do with suggestion These drugs do not act in t same way in different forms of mental disorder, nor their application a simple undemanding procedure, coming as a godsend for the harassed physician who is innocent of psychiatric subtleties and eager to clear up the patient's troubles by a Gordian knot attack That they save time in dealing with hysterics is perhaps the only justification for their having such terms as "hypnosis" and "analysis" tacked on to their names There are many differences betwee sleep and hypnosis, and between either of these narcosis, and to attach the word analysis, nowaday to anything and everything in a psychological context is to go in for miching mallecho

ELECTROPHORETIC COMPONENTS OF DIPHTHERIA ANTITOXIN

SOME attention has been paid during the last few years to the physicochemical changes occurring in the sera of horses undergoing immunisation Important progress has just been reported by Kekwick and Record[1] of the Lister Institute, using the electrophoresis apparatus of Tiselius[2] In normal horse sera four protein components can be demonstrated—albumin and three globulins, α, β and γ As immunisation with diphtheria toxoid proceeds, the same four components are obtained, although the relative proportions of each become altered, in diphtheria antitoxic horse sera the antitoxin is associated with the β and γ globulins By electrophoretic methods these components can be separated, and their properties compared with those of the sera from which they were derived Quite early in the course of injections the percentage of globulin rises The immediate reaction is the production of a relatively small amount of γ globulin antitoxin, the percentage of which remains fairly constant at a low level for most horses, but the main increase in globulin is due to the β constituent which is predominantly responsible for the antitoxic activity of most sera The α globulin and albumin components are not antitoxic A study of the β and γ globulins and of a number of diphtheria antitoxic sera containing them has been made by Kekwick and Record These globulins possess a number of properties which distinguish them sharply from one another From the immunologist's standpoint perhaps the most interesting distinguishing property of the separated β and γ globulins is the in vivo/in vitro ratio[3] 0 9 for β and 2 for γ globulin It has been noted that the γ constituent, with its higher ratio, develops early in immunisation, and in this connexion Glenny and others[4] previously observed that early bleedings from horses tend to show a high in-vivo/in-vitro ratio, while the general tendency is for this ratio to fall as immunisation proceeds The antitoxic γ globulin from a very limited number of horses showed the same avidity characteristics, suggesting that the γ globulin from these horses was of identical composition But Kekwick and Record point out that occasional in vivo/in-vitro ratios greater than 2 have been described, the origin of which is not yet clear They also make the interesting observation that the nitrogen specifically precipitated by diphtheria toxin from antitoxic γ globulin is twice that precipitated from β globulin, although the molecular weight as determined by the ultracentrifuge is the same for both β and γ globulin Much of this technical analysis will be heavy going for the uninitiated, but the suggestion that the γ globulin antitoxin may have some advantage therapeutically should not pass unobserved The γ globulin antitoxin flocculates with toxin more rapidly than the β globulin, and appears to have greater avidity Further research may show whether it is possible to produce greater amounts of the γ globulin during immunisation, and whether this special fraction is clinically more efficient

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[1] Kekwick R A and Record, B R *Brit J exp Path* Februar 1941, p 29

[2] Tiselius, A, *Biochem J* 1937 31 1464

[3] The in vivo value of a serum is obtained from tests on laboratory animals and the in vitro value by the Ramon flocculation method

[4] Glenny A T Pope, C G Waddington, H and Wallace, U *J Path Bact* 1925, 28, 463

CONTROLLED COUNTERIRRITATION

ALTHOUGH counterirritation has through the ages been one of the most popular ways of easing pain its use has been empirical, and little effort has been made to understand its undoubted efficacy Heat, cold, rubbing and scratching have from time to time been superseded by more drastic methods such as cupping, the cautery or blistering ointments, and recently vibration and electrical stimulation have also been used The experiments of Gammon and Starr[1] seem to explain some of the effects of counterirritation and to offer more effective methods for its employment They produced prolonged pain in themselves with an irritant ointment rubbed into the skin and by subcutaneous injection of 10% sodium chloride, and they then observed the effect of temperature changes, vibration and of tactile and electrical stimulation On the application of a counterirritant the pain was lessened or abolished, but it soon began to return and had reached its original intensity within a minute When the counterirritant was removed prompt relief again occurred, but the pain returned within a minute When counterirritation was too strong a most disagreeable summation with the original pain resulted, and if it was too weak there was little effect on the pain The best counterirritant was cold and it was most effective between 4° and 10° C, while heat was optimal at 40° C Cold, electric stimulation, heat, tactile stimulation, vibration, and a jet of air were relatively effective in that decreasing order when applied to the pain produced by injection of hypertonic saline, but only cold was effective in easing the pain of skin irritation As would be expected from their early results, they found that interrupted counterirritation gave far greater relief from pain than did continuous stimulation The effects produced were not dependent on vascular changes, on the contrary, animal experiment showed that streams of nerve impulses from pain receptors were interrupted by the counterirritation Gammon and Starr then applied their results to 80 patients, and found that the majority preferred 40 seconds of heat alternating with 30 seconds of cold but the choice of counterirritant varied somewhat with the type and origin of the pain, and static electricity was sometimes surprisingly effective They agree with Cushny[2] that counterirritants act centrally, especially as relief could be obtained by irritation remote from the source of pain, and they think there may be central depression taking place within the thalamus This transitory central depression after stimulation may be similar to that recently described by Bronk[3] Whatever the physiological basis for these observations, it is stimulating to find medieval guess work giving place to the scientific control of pain through the cooperation of institutions for medical and for physical research

SHARING OUR RISKS

MANY good practices have been interrupted by bombs, and many others have melted away as towns are evacuated, hardship to individual practitioners has often been great The Medical War Relief Fund, administered by a committee representing the Royal Colleges, the Royal Medical Benevolent Fund and the British Medical Association has already been able to distribute much needed loans and gifts, so far amounting to £4000 A typical case is that of a doctor whose house and equipment were destroyed by an incendiary bomb, his income had fallen, owing to the war, so that he was only just able to carry on The need for new clothes and equipment faced him with an outlay which was quite beyond his means, and the fund was able to make a timely loan Another general practitioner rejoined the Army in which he had served in the last war, but was invalided out after taking part in the Dunkirk withdrawal His practice had gone down in the interval and there was a gap between the date when his Army pay stopped and the date at which professional bills became due He was helped with a gift and a loan A number of doctors have been killed in raids which also destroyed the greater part of their property Their widows, some of whom have children to rear, have received gifts or loans and have been helped to obtain pensions from appropriate sources Loans are made free of interest and those receiving them have written warmly of their intention of paying them back as soon as their circumstances permit All the same, applicants are bound to increase in number while the war lasts, and though contributions to the fund up to the end of March had exceeded £20,000 the drain on it is likely to be heavy Every member of the profession is asked to contribute, and those who have not received a local appeal may send subscriptions to the hon treasurer, Medical War Relief Fund, B M A House, Tavistock Square, London, W C 1

THE MORTALITY OF HUSBANDS AND WIVES

MANY years ago Karl Pearson and his colleagues[4] observed a positive correlation between the length of life of husband and wife, an association they attributed mainly to "assortative mating" though they thought common economic backgrounds might well play a part The subject has recently been taken up and extended, with value, to different causes of death by Ciocco, who has studied the registers of death in Washington County, Maryland[5] He finds not only a rather greater degree of association than the earlier workers in length of life but also evidence that husbands and wives, in the case of four diseases—tuberculosis, influenza and pneumonia, heart diseases, and cancer—tend to die of a common cause more often than would be expected if chance alone was operating For example, when the husbands died of tuberculosis 17 1% of the wives also died from tuberculosis, but when the husbands died of other causes only 5 8% of the wives died from tuberculosis Similarly when the husbands died from cancer 15 5% of the wives also died from cancer against 10 3% when the husbands died from other causes With tuberculosis possible explanations are not far to seek marital infection, marital selection and common economic levels may all play a part, though the relative importance of each cannot be determined Influenza and pneumonia are also infectious diseases and influenced by economic circum illness, excluding those requiring certification, and to share in the treatment of adults and children in an outpatient department which before the war was one of the busiest of its kind in the country Patients will come more readily at an early stage of their illness to a general hospital, and will have the advantage of easy access to first class facilities in the other branches of medicine provided by a teaching school The risk incurred in completing the building now will be well justified if, at the end of the war, it is able to begin its work at once

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[1] Gammon, G D and Starr, I *J clin Invest* January 1941, p 13

[2] Cushny A R Textbook of Pharmacology and Therapeutics London, 1924 p 75

[3] Bronk D W *J Neurophysiol* 1939, 2, 380

[4] *Biometrika*, 1903, 2, 481

[5] *Hum Biol* 1940, 12, 508

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Special Articles

ALLOCATION OF MEDICAL MAN-POWER

THE Ministry of Health has sent a circular (No 2323) medical officers of health, local authorities and spitals suggesting means by which they can help to et the growing needs of the Services for doctors nsideration of civilian and Service requirements by e ministers concerned has made it clear that further ecial measures are necessary if the limited numbers of ctors available are to be employed to the best advan-ge The three Service departments are reviewing eir medical establishments and it is hoped thereby to duce the further calls on doctors in civilian practice he needs of the different theatres of war are, however, great that such calls will still have to be made from ne to time, these will be met as hitherto from practi-oners liable to military service,[1] through the machinery the Central Medical War Committee The Minister Health is reviewing the E M S, with a view to releasing the Forces a number of whole-time and part-time embers both by reducing the strength of the service and replacing British members with foreign practitioners

HOSPITAL STAFF

Hospital authorities are urged to take all possible steps to duce their establishments of resident posts and to consider vourably the employment of foreign doctors The Minister also of the opinion that the time has now come, as in the t war, to employ medical students in their final year as nior house-officers (A posts), so far as is compatible with e law By this means a number of present holders of A sts will be freed to perform the duties now carried out by nior house-officers (B2 posts) or junior medical officers 31), who will thus be released for the Forces In the terests of medical education, and to maintain a proper andard of treatment, students should be employed in this ay only in hospitals where their work can be supervised by embers of the teaching staff of the medical schools It is nsidered inadvisable to replace more than half of the nior house-officers in this way, and normally students hosen for these appointments should not hold them for ore than 3 months For purposes of reimbursement the inistry will recognise honoraria of £50 a year, plus board nd lodging not exceeding a further £100, for students mployed in this way Hospital authorities should feel that ery hospital in the emergency scheme is a unit in a compre-ensive organisation, so that they should help each other at imes of special stress by lending medical staff Practitioners ho are enrolled in class 1 or 2 of the E M S are at the isposal of hospital officers and group officers for this purpose, ut the same principle should be extended by hospital uthorities to their own staff The services of additional unior house-officers are particularly valuable for relieving emporary pressure on hospitals, and the Minister hopes that equests for loans of staff will be met readily, without any uestion of invoking the compulsory powers vested in group nd hospital officers under the defence regulations The Minister has refrained from enrolling holders of A and B2 posts in the E.M.S so that hospitals may have full liberty of action to move junior house-officers from one kind of work to another in the interests of their education, and in order to facilitate the flow of newly qualified men into hospital establishments

PUBLIC-HEALTH OFFICERS

The Minister hopes that local authorities will consider the possibility of releasing members of their public-health medical staffs not holding hospital appointments For example, the employment of a woman doctor on maternity and child welfare work and the transfer of other functions to a general practitioner over military age might enable the authority to release a young member of their staff for the Forces In some areas it may be possible to share the work of medical officers of health and their assistants between the officers of different authorities Administrative and clerical duties not requiring to be directly performed by a medical man should be delegated to lay staff There is no need for a medical officer to remain on duty at an A.R P control centre solely for air raid purposes at a time when no alert has been sounded, and indeed his presence there is not always necessary throughout the period of an alert if he can be quickly summoned when required

The circular concludes with these words Private practice has already been seriously affected by the recruitment of practitioners of military age, and, if a fair balance is to be preserved and essential medical services carried on, other branches of medical practice ought to make further contributions to the Armed Forces The Minister is confident that he can rely on public-health and hospital authorities to cooperate in meeting this urgent national need

UNITED STATES OF AMERICA

MALFORMED BABIES

THE New York State health department has been conducting an experiment in reporting Since January 1940 birth certificates have had on the reverse a series of questions which the attending physician is invited to answer, but answers are not legally required The questions are

"Pregnancy, complications of , Labor, complications of , Weight of baby at birth grams or lbs ozs , Were any operative or instrumental procedures used ? , Specify , Indications , Did baby have any (1) congenital malformation ? describe (2) birth injury ? describe "

It was expected that perhaps 40% or at most 60% of the certificates would be completed on the reverse It has been found that actually more than 90% are completed From the answers to the last question a tabulation has been made for the six months, Jan 1 to June 30, 1940 In this period there were 44,986 certificates in upstate New York and answers to the above questions were given on 41,000 certificates On 917 certificates birth injuries or congenital malformations were specified An analysis of the descriptions by the department s orthopædic surgeons reduces to 286 the number of undoubted orthopædic conditions A check of death certificates up to Oct 1, 1940, shows that 75 of these babies (26 2%) had died by that date The following table shows distribution of the orthopædic conditions .—

BIRTH INJURIES AND CONGENITAL MALFORMATIONS AMONG INFANTS BORN ALIVE IN NEW YORK STATE (EXCLUSIVE OF NEW YORK CITY) IN THE FIRST HALF OF THE YEAR 1940

Total		917*
Orthopædic conditions		286
Spina bifida	71	
Club foot	65	
Harelip and/or cleft palate	14	
Adactylism, polydactylism, syndactylism	37	
Foot deformities other than club	30	
Deformed or undeveloped hand or arm	13	
Erb s palsy	11	
Congenital dislocation of ulna knee, ankle	4	
Hand foot or arm missing	3	
Spastic	2	
Torticollis	2	
Atonic musculature, leg and arm	1	
Bell s palsy	1	
Osteogenesis imperfecta	1	
Achondroplastic dwarf	1	
Non-orthopædic conditions		631

* Exclusive of 11 residents of New York City or other states

The department is under obligation not to make use of this information except for statistical purposes However, 49 out of the 211 babies with orthopædic conditions have been separately brought to the attention of the orthopædic division of the State health department and in these cases the services of the department will be available for consultation

WIRELESS INTERFERENCE BY DIATHERMY

It is exasperating to be listening to one of the numerous European stations and be interrupted by a storm of static put out by somebody's diathermy machine Recently the Federal Communications Commission held an informal conference in Washington at which members of the medical profession and representatives of the manufacturers of electromedical equipment were brought together One suggestion was that the manufacturers should construct their diathermy apparatus to operate on definite frequencies to be allocated for diathermy only. Three specific bands requested by the manufacturers stances It is not so simple to suggest an explanation for the greater common incidences of heart disease and cancer Marital contagion might be an element in heart disease if the causative factor in rheumatic heart disease is infectious, otherwise we can but fall back on conscious or unconscious marital selection of like by like in constitution There is no evidence of a physical type for cancer, most workers deny an infective agent, and there remains, it seems, only the common environment including diet This suggests a line of approach which merits further attention

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[1] Only whole-time professors and lecturers over the age of 25 are reserved in the schedule of April 10, 1941

BLOOD SEDIMENTATION

Two short articles by N K Basu in the *Indian Journal of Pediatrics* for January (p 27) deal with blood sedimentation in relation to tuberculosis and vitamin-C deficiency The experimental evidence quoted is too meagre to allow of any definite conclusions being drawn, but the papers are none the less interesting Basu uses an unusual technique for measuring the B S R, inasmuch as the blood is diluted with saline to the extent of 1 in 50 This startling departure from common practice may serve as a reminder that the principal requirement of any technique is that it shall give results which show an accurate relation to clinical findings It has been suggested that B S R measurements are of value in the diagnosis of tuberculosis, and although this view is not generally held in this country, it may be that Basu's modification of the sedimentation-test gives the greater sensitiveness he claims for it He also finds that the administration of ascorbic acid to tuberculous patients tends to improve the B S R but he leaves it to others to decide whether this is accompanied by improvement of the patient The sedimentation-test has had a long run, and it is time that the assessment of its clinical value was agreed upon The ease with which the test can be performed has perhaps stifled clinical as distinct from laboratory research, or possibly the organisation of the collective research required has been dismissed as impracticable The matter should not remain here

STAMPING OUT HEAD LICE

WHEN medical inspection was introduced 34 years ago the formidable problem of the head louse was for the first time tackled systematically Like so many drives in medicine and public health, the attack failed to achieve complete victory because of the success of its early battles Within a few years the rate of infestations of the heads of school children fell from nearly 90 to about 10% and the foulest disappeared In some districts even better results have been obtained and of a few it may be said that the head louse is no longer resident and does not breed regularly, but these are few indeed Lately the attack has been one of passive routine rather than active warfare and though it has kept the lousiness of the heads of school-children within reasonable limits in normal circumstances nothing has been done towards extermination The Ministry of Health and the Board of Education have now issued a memorandum[1] on the subject which is timely, for though it might neither surprise, enlighten or help the first generation of school inspectors the present generation has largely forgotten the experiences of the past The memorandum states that powers are available to local authorities which "should be adequate to secure the desired result" The experience of the past is that these powers are not adequate The most important in theory is the power to cleanse verminous persons, but as this requires consent it is of no real value For there never was any great difficulty in cleansing those who wished to be cleansed As the head louse is a strict parasite and its habitat the hair of human scalps, success can be achieved only by action on this nidus, but to effect elimination all heads must receive attention The chie reservoir of the louse has shifted from school children t infants and young women, so the main attack should b shifted also to these fields where our powers are much restricted Continuous instruction and education o senior girls is our chief hope, for if these are well traine they will keep their own heads clean when they leav school and look to the heads of their children in afte years But for complete success we must hav compulsory powers to cleanse those who will not cleans themselves Now that the Board of Education an Ministry of Health have reawakened to the menace o the head louse, they may realise that the intermitten issue of circulars does not solve national problems

MINIMAL HEALTH REPORTS

CIRCULAR 2314 of the Ministry of Health is no mor than a reminder that the reports for 1940 should b framed as laid down by circular 2067 which was the fina instruction for the reports of 1939 Some of the report for that year were nearly completed and many mor had been commenced before circular 2067 was receive in July, so they are a mixed lot, some being but slightl shortened and others stripped to the bone It is to b noted that reports for 1940 are required, but they ar to be as short as possible and to deal only with matter relevant to that year which were of public healt interest Owing to the suppression of conferences, difficulties of communication and curtailment of journals we have not the general knowledge of the public healt history of 1940 that we have usually at the end of year, and are largely unaware of any points of specia consequence or interest which may have occurred in th various localities It is important that any suc happenings as would be reported in ordinary circumstances should be recorded in the reports for 1940 especially in view of the exceptional difficulties i forecasting what is likely to happen in the epidemiologica field in the years ahead of us We are not prophet and cannot foretell the future, but we can deduce probabilities from evidence which we look to find in th annual reports for the past year In present circumstances the most interesting information is that concerning outbreaks, or alleged outbreaks, of food poisoning or food spread diseases and unusual prevalence o diseases which are, or might be, connected with nutritional deterioration

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Prof W W C TOPLEY, F R S, has been appointed secretary to the Agricultural Research Council in succession to Sir Edwin Butler who is retiring through ill health Professor Topley, who was appointed a member of the council last year, is director of the division o immunology at the London School of Hygiene, and since the outbreak of war has been guiding a national laboratory service In this appointment we see an important development in the union of health and agriculture

UNDER the new schedule all medical and dental students will be reserved from the date of acceptance b a recognised *medical school, subject to satisfactor* reports on their progress in study from time to time The medical schools will, however, not have unlimited right of admission, but will be requested to adopt some quota in terms of recent entries

WE regret to learn of the death, in London on April 10, of Dr DAVID FORSYTH, consulting physician to *Charing* Cross Hospital and to the Evelina Hospital for Children Dr Forsyth was one of the early students of psychoanalysis and modern psychological methods He was 64 years of age rays imagined that I was working with living subjects t I never got a real chance to fulfil this urge , I nted to be a surgeon " I smiled grimly in the dark- ss, but in a moment my smile vanished, for he resumed monologue "That's why I murdered those two, u know " "Quite so," I agreed quickly "If only I d known that this war was coming," he went on, hat would not have been necessary , I should have nd wonderful opportunities to kill people every day, d afterwards I should have come back to my practice " But that's not murder, Ruxton, Dr Ruxton," I marked, "that's defending your country " "Ah, ell," he sighed wistfully, "I should have revelled in it st the same But do look me up in the medical gister, I had to work so hard for those diplomas " What does it matter, now that you are dead?" I asked, nuinely puzzled "Dead, am I?" he asked with a pulchral laugh while his head lolled about as though would drop off at any moment "I'm not dead, I sure you They think at the gaol that they killed me " gain he laughed, and I felt more and more impatient his enjoyment He continued "I live in the oughts of millions of people, yes, millions That is hat matters , and I don't suppose you can say the same ing " *I made no comment on this statement,* for I called that he was subject to maniacal outbursts of mper "And in any case, except for my neck, I'm as od as any of you," he added defiantly "Here," he id peremptorily, "just take hold of it and feel it " ith this, the figure stooped down over my bed, and his ld wax-like features came close to my face Nearer nd nearer he came, and as the face approached it grew gger and bigger until it filled the whole space of the om and I thought I should be suffocated or crushed to eath When my predicament had become almost tolerable I cried out in the darkness and my voice eveloped a curious warbling note "Thank God!" I reamed as I flung myself out of my bed and ran to itch on the light, "that's the siren "

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[1] Accompanying Circulars 2306 (Ministry of Health) and 1544 (Board of Education) to local authorities

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We all know medicine has its fashions, and some of the ore detached of us have long recognised that the ashion is largely dictated by the current of thought in he outside world In war-time surgery and decisive edicine are in vogue , in the appeasing days of peace he pandering bottle of medicine, safety-first methods, nterminable psycho-analysis, lethargic conservatism old sway In 1915 I went down with an acute attack of ulmonary tubercle The time was fortunate and I fell nto the hands of robustly-minded physicians Mine as among the first pneumothoraces at a famous sana- orium Those were the days of heroic refills, and several imes over 2000 c cm sent my apex-beat to my right ipple and me gasping about my business When I wam—and after the first few weeks I swam every orning before breakfast—I could not sink for the air ithin me They got splendid results, those men of the ard exercise school, of whom the high priest was Marcus Paterson Their theology of auto-intoxication may have been wrong, but their doctrine was eminently sound fight the beast, don't appease him, seize every possible chance of getting in training short of provoking a febrile reaction, and keep it up , it is a whole-time contest, generally a life contest, and he who throws points away by late nights, over-smoking or drinking, slacking his exercise and getting soft, is going to lose Later, as a doctor in various sanatoria, I saw the appeasers' treatment with its emphasis on rest, rest, rest I saw the doctor going round the balconies taking care that patients were screened from the sun (they might get a reaction) or at a private sanatorium on the evening round like a wine steward—"What will you take to-night, an Allonal, a Sedormid, a Snoozoid, or just a little linctus?" Discipline was slack "Let the poor fellows go to the races, let them go to the dance, it will take their minds off their disease " Bah to the appeasers!

My lung caused me no trouble for fourteen years, then it broke down and got a hole in its middle, necessitating a thoracoplasty This wasn't nearly so unpleasant a proceeding as it sounds or looks, and I was working again in four months It took me longer to recover the slight aggressiveness which is the visible result of continuously scrapping with an invisible foe For the last eleven years my only trouble has been an occasional crop of pulmoliths which merely cause annoyance, choleric coughing and expletives A curious point about them is that although they cause spasms of violent coughing they never come up then , an hour or so later one gives a little "chairman " cough and there's the brute in one's mouth, hard as nails, black-spotted, and up to the size of a hemp seed

Now that we are getting well and truly into the war I expect they will be going back to the hard school in the treatment of tuberculosis Its object is not so much to preserve life, which may not be worth having, as to return to normal life, which is

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What a vast number of cameos we collect going through life, whether squirrel-like for future use or jackdaw-like capriciously, I don't know Here is one I turned out the other day from the beginning of the century a hot summer's day, the prep school sports, white dresses, small boys, hot and excited, glittering prizes , the headmaster, "Old Bug," turns to another incredibly old man of fifty or eighty or so, "Give me the long-distance runner every time He has the enduring qualities and they are the ones that count in life " Perhaps I was reminded of this by the sight of Captain Plodder in bowler-hat coming home for a few days between trips across the Atlantic, which he has traversed Lord only knows how many times since war began , perhaps it was that sturdy band of A R P workers Their name is legion and they are the backbone, the large and small intestine, the heart and assorted viscera of the body, politic and belligerent Not that sprinters don't have their uses, but theirs is a *quicker tempo,* more suited for acute crisis, and more evanescent Mr X came like a north wind amongst us, stiffening us to our tasks and bracing us to our duty In this southern town we were, he reminded us, in the very forefront of the battle and none must leave the parapet The matron must cancel the nurses' holidays and all of us stand-to Nelson, we were told, only once went ashore and then but for a few hours in the eighteen months before Trafalgar How right, we felt, he was, how splendid to emerge from his retirement and inspire us with something of the austerity of his native moorlands But now we're not so sure, there is a certain staleness abroad But perhaps that is because he's no longer there to spur us , he's gone with his family to the Midlands

In the first week of the war I was going up the lane to my cottage, when strident hooting, crescendo, drove me into the ditch In a swirl of dust a huge car sped by and I had a fleeting vision of Lady Pouncey in Red Cross uniform at the wheel If ever there was a case of "The Guards need powder, and, by God, they'll have it too," here it was Later I heard that the local ladies had commandeered the huge old rectory here as a hospital for sick evacuated children They had got one small boy with tonsillitis and Lady P was dashing up with extra blankets Later I went to sea, but I learnt afterwards that although that was the only child patient they ever had there it was by no means their only experience of illness, for the ungrateful boy gave many of them his streptococcus, throwing in as a make-weight a few pediculi capitis, which those enthusiastic crusaders took home and distributed even to the third and fourth generation Of course I know nothing about these good people's performance on the track, but I daresay there is something in what Old Bug said

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ON completing the seventy-fifth volume, the editor of the *Indian Medical Gazette* sends us a pleasant booklet on its history The account appeared first in the December, 1940, issue of his journal and recalls notable men—among them Darwin, Cunningham, Ross and Rogers—who were early contributors The gazette has been a steady record of advances in the study of tropical medicine, and more than once has shown foresight which later experience has justified In its pages Macnamara suggested the use of emetine instead of ipecacuanha in dysentery , and in the same issue the possible value of the cinchona alkaloids *other than* quinine was forecast It is discouraging to see still unfulfilled the hope, expressed in the first issue, that government laboratories should be set up, staffed by qualified chemists, to study the pharmaceutical products of India and make reliable preparations of them would have occupied 60 broadcast channels The commission was unwilling to grant so much valuable air space and some of the manufacturers agreed that a restricted channel was possible but could be achieved only at prohibitive cost Others did not believe it possible, since their equipment would be operated not by trained engineers but by physicians and their technicians A committee appointed to look into engineering practices and circuit design costs will report to a future conference

In England Now

A Running Commentary by Peripatetic Correspondents

When one reads the strange patois of the patent-medicine advertisement, one is sometimes inclined to ask what picture such phrases as "acid stomach" or "chill on the kidneys" conjure up in the average person's mind Probably everyone's is different, depending on their previous experience of acid and chill , the average young man will think of an acid stomach as a sort of wireless battery, while the modern girl will picture a chilled kidney as a large marron glacé Often there will be no clear picture at all, for it is not the least of the functions of words to draw a curtain, sometimes a humorously distractive curtain across tragic pictures—dotty, pegging out, mopping up, liquidate I confess that when I read of, say, cholelithiasis or gastric ulcer I think of a far more diagrammatic gall-bladder than nature's own, of a far tidier stomach, not quite with traffic lights at the pylorus but getting on that way, so much so that when in the butcher's shop or P M room I see the real thing it always gives me rather a shock Surely that wonderfully intricate structure, that marvellous mechanism, those Homeric contests could not have been staged in this unworthy piece of meat ! Probably my diagrammatic thinking is due to my mind being incapable of consistently picturing the reality, that is to say I am doing for myself what the schoolmaster does for the boys on the blackboard, simplifying matters Akin to this diagrammatic thinking is thinking in caricature, at which children and savages, and the child and savage within each of us, delight To sum up the 120 million in the U S A in the crisp figure of Uncle Sam, the Russian horde as a grasping and slightly immoral bear, although it may contain a wisp of truth, is a slovenly form of thought, or rather a way of saving oneself the trouble of thinking Again I plead guilty I always look on those grown members of our own family of nations as individuals Canada, a businesslike young man, keen and practical , Australia, wiry, sporting and a little wild , New Zealand, deadly serious, a chip of the old block , South Africa, sunburnt, capable, with some psychological upset in his boyhood which has left a scar This, of course, is of no importance in me, the village doctor, but when foreign offices think in the same way, as they have done for the last few hundred years, it is dangerous These colossal nursery figures haunt the mind to the exclusion of reality They give undue emphasis to the differences between nations and ignore the 95% of truth, the common humanity of us all It is a childlike way of thinking, but then we are probably groping through the quite early childhood of man

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I joined the other members of the fire-picket assembled in the assistants' room of the physiology department, and over tea and biscuits we talked of this and that for an hour or so Two of the students had been discussing motives for murder, and they invited me to state my views, but I tried to steer the conversation into other channels At 11 30 P M we decided to turn in, and taking a torch and a steel helmet I made my way to my post in the department of forensic medicine The dark, empty corridors and the penetrating smell of cedar-wood oil produced a peculiar sensation of eeriness that I certainly did not experience earlier in the evening The small coal-fire in the professor's room had burnt to a dull red glow and I poked it vigorously to a friendly flame Having arranged my sleeping-bag and blankets on my camp-bed I began to undress Outside the wind was rising and the draught made the doors and windows creak and rattle I began to feel a curious reluctance to turn round or even to look about me , absurd, of course, but things do seem different when it's dark and one is alone in a large building This little room and its adjacent laboratory, I mused, had been the scene of research that had brought many murderers to the scaffold Y there was Buck Ruxton , he must have suffered unspea able anguish while awaiting trial How many times d he rehearse his version of the mysterious disappearan of the two women ? I looked up at the lab door, as expecting an answer to come from that fateful room, b my attention was arrested by something that made n heart gallop and the sweat break out on my forehead spun round The room was empty I had been t victim of an optical illusion , the glass fronts of t bookcases were acting as parallel mirrors The wh face that I had seen staring at me was the reflection of n own I coughed and walked over to poke the fire aga to dispel the oppressive sense of loneliness Then quickly finished undressing and lay down on my be For a few minutes I tried to exclude from my mind ever thing but the instructions to firewatchers , if the pr fessor's room were to catch fire, should I try to save h lecture notes ? By invisible steps my thoughts four their way back to the Ruxton case, and soon the featur of the two murdered women were dancing before m aching eyes I whistled to drive off the evil spirits an soon I was gratified to realise that the whistling ha ceased and my eyes were shut I remember hearing th chimes of the university clock striking midnight , som of the strokes were loud, as though tossed into the roo by the tempestuous wind that now howled around th attic storey, and some were smothered by the sound rain that pattered viciously against the blackene skylight

Was that somebody walking in the passage ? listened intently, but there was only the low moan of th wind and the flapping of a blind No, I thought, ther is no doubt about it now , a door had opened and seemed to be the laboratory door I gripped the sides my bed and my heart bumped heavily and irregularl against my ribs "Who's there ?" I shouted, my voic scattering the silence like a broken glass "Ha ! exclaimed the figure as he caught his foot against the le of my bed, "this is new" Then he went on mono tonously "I'm here most nights about this time, bu I've never had visitors before " "Who the dev are you, and what do you want ?" I shrieked at him He made no reply for a time, but I could hear his rathe heavy breathing The glowing embers in the grat faintly illuminated the form of a smallish man dressed i a patchy white coat that smelt of the dissecting room He fidgeted nervously with his hands, and he seemed t have no control over his head which lolled about passivel on his shoulders When he moved he glided as thoug on wheels, and as I watched him he suddenly turned an transfixed me with protruding, glassy eyes I la hypnotised by that ghastly, mongolian face, and for moment I felt like a terrified partridge awaiting th swoop of the hawk "Now," he leered, "now, do yo know me ?" "Yes," I returned in a calm voice tha astonished me even more than the frenzied tones i which I had first addressed him, "You are Ruxton" "Dr Ruxton," he corrected me , "failed F R C S Edinburgh," he added with unmistakable pride "Wi you do me a favour ?" he suddenly asked "What i it ?" I said guardedly "I have the impression that m name has been erased from the medical register," he said feelingly, "will you find out for me ?" "But didn't yo expect that ?" I queried "After all, you were found guilty of " "Murder," he said simply, apparently sensing my effort to spare his feelings "But surely th G M C has revised all that since the war started," he went on, seemingly puzzled and exasperated, "murde is commonplace now" "That's hardly right," I said in reply "It's true that we're at war, but killing Germans and Italians isn't quite the same thing as murder, you know " "Isn't it ?" he asked, as though dissatisfied "I only wish that it had happened in my time," he added in a whisper "Why ?" I inquired, somewhat surprised at the way in which he was developing the idea "Well, you see," he replied, "ever since I was a child I have had a passion for destroying things—especially living things" I shifted uneasily in my bed "I used to pull to pieces anything of the kind that I could lay hands on," he continued with obvious relish, "—insects, frogs, birds The dissecting-room and practical surgery were the best parts of the medical course , I fathers believed but that our power over "unpreventable" diseases is considerably greater This should guide us in reconstruction of the medical services after the war for preventive medicine is mainly in the province of general practitioners trained to regard life from its physiological rather than its pathological aspect Epidemiological investigations must always be a communal business but all else in preventive medicine is strictly personal

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Parliament

As Mr HELY HUTCHINSON suggested Sir KINGSLEY WOOD's realistic budget like Nebuchadnezzar's diet may be wholesome but it is not good Yet the House of Commons accepted it with approval Mr F W PETHICK-LAWRENCE opening the debate said the only criteria of the proposals were do they face up to the facts, will they deliver the goods, and are they fair? Dr RUSSELL THOMAS, who delivered an eloquent maiden speech without notes even asked for more He thought us a peculiar people to allow our bodies to be conscripted for the forces yet hesitate when it came to our material affairs And Mr A EDWARDS later said he thought Dr Thomas was almost a symbol of the rapid transition which is taking place from orthodox capitalism to practical socialism Captain H F CROOKSHANK was surprised that there was so little comment on the innovation of post-war credits but Mr P C LOFTUS regretted that children's allowances, which he regarded as an interlocking part of the Keynes plan, had found no place in the Chancellor's proposals and several other members returned to this point Mr H GRAHAM WHITE pointed out that we were illogical to have a wage system which pays no attention to family responsibilities and a social system which does, and Mr D L LIPSON said that as a former Minister of Health Sir Kingsley must realise as few members could the need for this reform On another point Mr R A. CARY reminded the House that when the war ends we shall not find peace, we have to build peace The bogy of inflation stalked through the debate But Mr R R STOKES, who was doubtful whether we had yet paid for the battle of Waterloo said he had heard it described as wind in the national belly

Captain G. S ELLISTON criticised the repeal of the medicine stamp duties on fiscal and public-health grounds He pointed out that as recently as 1936 a Select Committee reported the duties should be brought up to date and simplified but were of the opinion that the trade was suitable for taxation. The public was warned against the bad results of the extravagant practice of self-medication, yet the Chancellor proposed to remove a tax which acted as a check on this habit If these duties were wiped out a bill should be passed to control the advertisements of medicines He understood that the patent-medicine vendors were prepared to accept such a measure, and Sir KINGSLEY WOOD promised Captain Elliston that he would take into account the suggestions he had made

Mistake in the Budget Report

In the debate on the budget proposals Captain CROOKSHANK, financial secretary to the Treasury, drew attention to an error in the official report of the Chancellor's budget speech, the word "including" having been reported as "excluding" The passage should read

> " the figures which I shall give to the committee are comparable with a total of Government expenditure under all heads, that is *including* for this purpose the value of any supplies that may be provided by Lease and Lend assistance and the amount of payments in the United States under existing orders "

A Balanced Agriculture

In a debate on agricultural policy in the House of Commons, Mr R S HUDSON, the Minister of Agriculture, said that in the last war our main effort was directed to increase the production of wheat and potatoes while our production of milk and meat fell. In this war we must not only increase the production of wheat potatoes and vegetables, but also keep up milk-supplies and grow more feeding stuffs for our cattle We must avoid the mistake we made in the last war—and which the Germans made to a much bigger extent—of maintaining a large head of cattle on a bare ration which produced neither meat nor milk It was better to keep a smaller head of cattle reasonably well-fed and producing milk and meat than to have them walking about doing nothing but grow old If the farmers cooperate loyally, Mr Hudson expects by the autumn to have in this country a herd of livestock which we can keep through the winter in good condition on home-grown feeding stuffs which will produce meat and milk We shall also have large supplies of cereals and vegetables for human consumption Our agriculture will thus remain flexible and well-balanced and capable of making a still bigger effort as it will probably have to do, next year. In the dairy herds the poor yielders will be killed and Mr. Hudson hopes the reduction will have little effect on our total milk production

QUESTION TIME

Medical Grading of Recruits

SIR ERNEST GRAHAM LITTLE asked the Secretary of State for War whether he was aware that dissatisfaction existed regarding the methods at present in force by which the Army authorities overruled the grading of recruits by the civilian medical boards, whether he was aware that while two medical officers at least were required to reduce a recruit's category, one medical officer, unaided by any specialist or colleague, could raise that category, and if he would remedy this state of affairs —Captain H. D R MARGESSON replied The instructions for the medical classification of soldiers are at present in process of amendment The effect of the amendments will be that the medical category of a recruit will not be altered during his first month's service unless the circumstances are exceptional As regards reclassification after that period, apart from possible changes in a man's physical fitness during the time that may elapse between examination by a civil medical board and calling-up, disability may only come to light during training, on the other hand, the conditions of Army life may improve the physical fitness of a recruit to such an extent as to justify transfer to a higher medical category Specialist advice is obtained by the Army medical officer where necessary

Fees of Recruiting Medical Boards

Replying to a question the Minister of Labour said that the total sum paid in fees to members of recruiting medical boards in the 21 months up to Feb 28, 1941 is about £1,199,000 The number of doctors at present on the panels of medical boards is 3,724.

Women Officers in the R.A.M C

MISS IRENE WARD asked the Secretary of State for War how many women hold commissioned rank in the Royal Army Medical Corps, and why female personnel for the Auxiliary Territorial Service are examined by R A.M C doctors and male personnel by civilian doctors —Mr R K. LAW replied Eighty women hold commissioned rank in the Royal Army Medical Corps The Ministry of Labour are responsible for the medical examination of men called up for, the three Services under the National Service (Armed Forces) Acts as part of their general responsibility for the calling up arrangements As the Ministry of Labour are not responsible for the medical examination of recruits for the A.T S, this examination is normally carried out by R.A.M.C women doctors, but, if a R.A.M.C doctor is not available, a woman civilian medical practitioner is employed. I see no objection to this arrangement which works well in practice and is calculated to secure the most economical use of medical personnel.

Aid for Doctors in Danger Zones

Mr T E. GROVES asked the Minister of Health what consideration had been given to the fact that doctors in danger zones had suffered serious financial losses and were experiencing great difficulty in making a livelihood and yet doctors in safe zones by reason of evacuation, were profiting at the expense of those doctors who were trying to carry on in the danger zones, and whether some reasonable adjustment could be made, so as to compensate the less fortunate doctors —Mr E BROWN replied Measures to meet the situation described, which is not peculiar to the medical profession, are primarily a matter for the profession itself rather than for the Government The Central Medical War Committee has acted as far as possible as a clearing house for the transference

Public Health

Health of London County in 1939

Sir Frederick Menzies retired from the position of medical officer for London county and was succeeded by Dr W Allen Daley in November, 1939, and at the end of the year Dr J A H Brincker, whose work of recent years had been mainly in connexion with epidemiology, also retired The annual report which in normal times consists of several large volumes is for the year 1939 contained in a pamphlet of 15 pages

London was not the scene of battle in 1939, though it was expected to be, so the chief work of the county medical officer in the closing months of that year was to prepare for what did not happen until a twelvemonth later The population of the county in mid-1939 was estimated to be 4,013,400, a decline of nearly 50,000 on that of the previous year, it has now been shrinking steadily for some time, mainly from dispersal into the Outer Ring The county was not a self-contained unit when it was formed in 1888 and has long since had no boundaries except artificial lines, so its vital statistics are not those of the Metropolis The death-rate in 1939 was 12 3 and the birth-rate 13 0 The former rises and the latter falls as the population shifts, apart from natural causes which produce variations of the rates Infantile mortality was 47, a low level, this is interesting because the shift of population is not one which will favour a low infantile mortality, except for the reduction of overcrowding Fatal street accidents increased from 363 in 1938 to 519 in 1939, deplorable and inexcusable as the holocaust is, it must be borne in mind that the tendency of those who work in London to reside outside the county increases the opportunities of street accidents within the county As was the case throughout the country, there was no serious epidemic in London in 1939 and the numbers of diseases notified were exceptionally low There has been no smallpox in London since 1934 The numbers of the less common epidemic diseases are interesting because, owing to the size of the unit, they give a just idea of the frequency of these infections in quiet times Of cerebrospinal fever there were 169 cases with 34 deaths, of poliomyelitis and polio-encephalitis 98 cases with 16 deaths, of encephalitis lethargica 11 cases with 49 deaths The last-named disease is dying out and those who suffered from it in the years of its prevalence (1920–25) are dying out also Of food-poisoning, which has been notifiable in London for several years, there were 131 cases, less than half as many as in 1938 At the end of 1939 the county council was dealing with 11 708 mentally defectives, owing to the movement of population the council is saddled with a load of mentally defectives, chronically insane persons, and other permanently incapacitated citizens greatly in excess of its legitimate share It is impossible to compare the health of London with that of the other great cities of the world and it would be unfair to gauge the health of the Metropolis from the records of what is just the kernel of a vast urban area The City of London itself, which does not come under the county council, ceased to be a population unit years ago

Chester Water

In a brief comment in this column (March 20, p 429) on Dr Lobban's report attention was called to wide variations from month to month in the chemical analysis of the river-derived water-supply, and the deduction was drawn that the water is subject to pollution Mr Frank Taylor, engineer to the Chester Waterworks Co, has written to say that these variations are not suggestive of poor quality, but are accounted for by last year's drought when, the river level being low, the flow was maintained by springs in the river-bed near the intake If the high chloride had been due to pollution the figures for ammonias and oxygen absorbed would have been correspondingly raised Absence of *B coli* in 100 c cm placed the water throughout the year in class I category of the Ministry of Health standard We are satisfied that Mr Taylor's explanation is the correct one and regret the undue emphasis laid in our note on the variation in chlorides Waters are now, of course, judged largely upon physical and bacteriological rather than upon chemical qualities

From the Annual Reports

Owing to the abbreviation required by war conditions there is a sameness about the annual reports and an absence of the comments and obiter dicta which give them their chief interest But brief as most of them are, they show that the health of the population varies considerably in different parts of the country, that the health services vary still more, and that the ways they are carried out vary most of all But it is rarely possible to correlate the health of the inhabitants with the efficiency of the services which look after it, for preventive medicine is slow in effecting improvements which show At infinity there may be a perfect method of dispensing health, but even if we could reach it it would have to be modified to suit local circumstances unless they also were perfect, and then no services would be needed at all

If we take at random a number of reports of district which are in no way exceptional, we find variation which are impossible to explain offhand, but by stud over a number of years it is usually possible to discove their causes Let us compare the 1939 reports of fou boroughs *Carlisle*, population 62,500, Dr Allen Semple M O H, *Walthamstow*, population 130,000, Dr A T W Powell, M O H, *Edmonton*, population 105,000, Dr D Regan, M O H, *Grimsby*, population 92,230, Dr J M Vine, M O H The birth-rates varied from 18 2 i Carlisle to 12 3 in Walthamstow, the death-rates from 12 9 in Carlisle to 9 in Edmonton, the infant-mortalit rates from 67 in Carlisle to 29 2 in Walthamstow Infantile mortality is independent of the age distributio of the population, but is not independent of the natur of the population In theory it should be equal every where and in the present state of our knowledge an possibilities somewhere between 20 and 30 Wh should some districts have infant-mortality rates twice thrice, four times, and in some tropical parts twenty fiv times the minimal rate? In this country towns wit the highest rates have on the whole the most complet maternity and child-welfare services, but they a obviously not equal to the difficulties to be overcome Infantile mortality is the best guide to the health amen ties of a district, but it is no criterion of the efficienc of any specific function The deaths from pulmonar tuberculosis per 100,000 population were Carlisle 3 Edmonton 48, Grimsby 62, Walthamstow 63 T deaths *from cancer* similarly adjusted were Carlis 155, Edmonton 133, Grimsby 179, Walthamstow 16 The four towns together, with a total population of ju under 400,000, had no deaths from the typhoids the was 1 from measles in Grimsby, 1 from scarlet fever Carlisle, 13 from whooping-cough, 16 from diphther Diabetes caused 67 deaths

The counties show as much variation as the borough though the administrative counties are mainly rural semirural and free from many of the special healt deterrents of the towns In three counties—*Cumberlan* Dr Kenneth Fraser, M O H, population 199,000 *Staffordshire*, Dr W D Carruthers, M O H, populatio 763,000, *East Sussex*, Dr R Ashlegh Glegg, M O H population 319,000—the birth-rates were, respectivel 15 9, 17 4, and 11 8, death-rates 12 9, 11 2, and 13 infant-mortality rates 55 6, 58, and 34 7 The deat rates from pulmonary tuberculosis per 100,000 were Cumberland 61, Staffordshire 48, East Sussex 37, t rates from cancer 165, 137, 200 Deaths from diabet in the three counties with a total population of 1,280,0 numbered 220 Deaths from all endemic infectio diseases, excluding tuberculosis, syphilis and influenz totalled 159 Public health is concerned with the healt life and not with the death of citizens, but with fe exceptions the toll of distress caused by various disea can be measured by their mortality-rates The exceptio to this are chronic rheumatism and psychologic disturbances, neither of which has much direct fatalit Some infections, such as measles, whooping-cough, a scarlet fever, are of greater importance for their seque than for their fatalities, but their mortalities are a rou guide to the incidence of their damage We have alwa paid more attention to the acute infections than to t other causes of ill health in the belief that we could co trol the former but not the latter, modern research tell us that our power over the infections is less than o has been the tendency at the Maudsley Hospital ere with a clinical background, treatments include chotherapy based on fundamental principles experi- e, and the qualities of a good doctor

W S Maclay
A P Stokes

ill Hill N W 7

Sir,—I am honoured by the interest given by your respondents to my address at the psychiatric section the Royal Society of Medicine I observe that of ht hostile critics five represent the Tavistock Clinic, writes as director of the London Clinic of Psycho- alysis one (Dr William Brown) as director of the titute of Experimental Psychology at Oxford, the ner is a general physician

Dr Hunter's criticisms are instructive for I suspect at they may be representative of the general physician his generation who is perhaps out of touch with modern nds in psychiatry Twenty years ago it was hope- ly supposed that a new era had begun and that all ntal disorder might soon be explained, and perhaps red in terms of psychopathology It has taken ychiatrists many years to correct by experience the er-enthusiastic claims at first made on behalf of analytic ychotherapy For a summary of the position as it peared seven years ago I would refer Dr Hunter to the esidential address to the psychiatric section of 1934 which Dr Mapother estimating the scientific progress ade by psychiatry in relation to what Dr Hunter scribes as 'all the time and energy spent on psycho- gical investigation in the last thirty years" concluded at the rate of such progress had been deplorably slow d that the retardation had been largely due to "dis- action from painstaking factual studies by the facile arms of animist speculation

The position since then as I see it has improved in so as the attention of psychiatrists today is directed ore towards the facts of clinical observation in relation heredity constitution and metabolism and less wards the hypothetical recesses of the unconscious ind Confession of failure in one direction is not an pression of defeatism but as Dr Hunter will surely lmit, a stimulus to further effort Witness the fact at mental disorder of a kind which fifteen years ago as being subjected to psycho-analysis, is now being eated and it would seem with more reason for hope means of convulsive therapy What is indeed bstructive to scientific advance is a state of self- mplacence If it be true for example that affective isorder, whether of psychotic or neurotic degree in most ises tends to recover in its own time, it is important iat the advocates of any special form of treatment iould subject their results to comparison with a control ries Dr Curran's contribution to your columns *Lancet*, 1937 2 1005) provides a salutary lesson in this espect

Dr Hunter takes me to task for making no reference the technique of examining the mind, but I would ask im to remember that I was addressing an audience for hom psychiatric examination is a matter of daily outine I would add that though the methods of sychiatric examination are time-absorbing, they contain o mystery As to the fundamental principles under- ving psychotherapy I find these clearly expressed in the 937 edition of Price s Textbook of Medicine There is o need therefore for me to restate them So much has een written about the technique of psychotherapy that here is surely no dearth of information for the student was not particularly concerned with this aspect of the ubject in my address except to indicate my view that he technique of psychotherapy is not so complicated or lifficult as some would maintain

Dr Hunter's remarks about psychotherapy in the mild ases of affective disorder reveal his belief that the ymptoms are produced by unconscious mental conflict With this generalisation I cannot agree I would not leny that conflict, of which the patient is not wholly onscious, may sometimes be an important factor but I elieve its importance and frequency have been greatly exaggerated with consequent under-estimation of other factors "The technique for investigating conflicts below the level of consciousness," therefore, though important, is not so all-important as Dr Hunter would infer Incidentally Dr Hunter when he argues that because I asserted that success in treatment depends much more upon the personality of the physician than the method employed I therefore suggested that there is no special technique of psychotherapy at all distorts my meaning He might as well say that the statement that the success of an operation for cerebral tumour depended much more upon the skill and experience of the surgeon than the instruments he employed, implied that no special instruments were required

Some of my critics have read into my remarks an intention to deny the value of psychotherapy altogether One goes so far as to speak of my "open incitement to the practice of psychotherapy by unqualified persons" I would ask them to read my address again when it is printed in full What I have said, or tried to say, is that there are in my view two kinds of psychotherapy One is simple and straightforward and its essential principles are easily grasped It should be considered as much a part of therapy as the use of drugs, exercises or occupation, and is applicable in all branches of medicine, though most often used and furthest developed by the neurologist and psychiatrist The other kind of psychotherapy is complicated, time consuming, expensive and with difficulty understood by any but the devotee after three or four years' training I have given it as my opinion that this kind of psychotherapy is of little value and in some types of mental disorder (to which it is nevertheless still applied) has proved harmful As it is this kind of psychotherapy which is the stock-in-trade of the Tavistock Clinic and the London Clinic of Psycho-analysis it is not surprising that their representatives have found this opinion provoking There is possibly more cause of provocation than this for I have suggested that there is no justification for psychotherapy as a special branch of medicine, that in the care of mental disorder treatment should not be divorced from diagnosis, and that diagnosis should be based upon an adequate training in general medicine neurology and psychiatry There are some medical psychologists who I think would admit that their qualifications in one or other of these respects fall short of the standards indicated in my address That I am not so isolated from modern medical opinion as my critics would believe I am assured from private communications both from neurologists and psychiatrists

I cannot take up your space to discuss criticisms in detail but in answer to Dr Bennet who asks what the neurologist can say of hallucinations, phantasy and dreams I must take the opportunity of referring him to the observations of Hughlings Jackson as an introduction to the neurological contributions to knowledge of these subjects

I am neither so ignorant nor so unappreciative as Dr William Brown suggests of the contributions of a strictly scientific and verifiable nature made by modern psychology to the advance of knowledge Indeed I believe that it is essential for the neurologist as well as the psychiatrist to be educated in these subjects This would be so if a diploma of neuropsychiatry, based upon the present diploma of psychological medicine, were made, as I have suggested a qualification for hospital staff appointment no less for neurologist than psychiatrist

With Sir John Parsons I am in full agreement The object of my address was to show that there is a neurological approach to mental disorder not to deny that there is a psychological approach The latter is taken for granted What I wished to emphasise was that no-one who is interested in the diagnosis and treatment of mental disorder can afford to neglect either approach and that at the present time neurologist and psychiatrist have each so much to learn from the other that they should enter into a closer alliance Addressing an audience of psychiatrists I stressed the importance of what might be learned from the neurological approach Had I been addressing a gathering of neurologists the emphasis would have been on the other side I am well aware that the neurologist in the past has neglected his opportunities and duty in the care of the neuroses These opportunities are many for judging from my own experience at least half the patients seen by a neurologist whether in hospital or private practice are suffering from "functional' rather than 'organic" nervous disease of doctors from evacuation to reception areas The official arrangements for war time medical services have also taken account of the special position of doctors in evacuation areas For example, a number of those in coastal towns have been appointed to salaried posts in the Emergency Medical Service in their own towns or elsewhere, and the number selected for commissions in the medical branches of the Forces is proportionately larger in the evacuation areas than elsewhere

Distribution of Medical Man-power

Sir **FRANCIS FREMANTLE** asked the Minister whether he had now established an organisation for settlement of priority, as between the demands of the several forces and departments, for medical men, recommended in January last by the Robinson Committee and urged by the Central Medical War Committee as essential to its work —Mr Brown replied The Service Ministers and the Secretary of State for Scotland and I are awaiting the results of the measures which we have taken to carry out the other recommendations of the Robinson Committee, and in the meantime we have not thought it necessary to set up any special priority organisation

Local Authorities' Finance

In answer to a question the Minister said that a total of £4,651,820 has been advanced to date to local authorities who are in financial difficulties owing to the war

Vaccination

In answer to a question Mr E **BROWN** said that the numbers of death certificates received during 1940 where vaccinia or vaccination was mentioned or the death was attributed to vaccinia or vaccination, and the ages in each case, were as follows

Deaths	Age	Deaths	Age
2	2 months	1	14 months
1	5 months	1	20 years
2	6 months	1	24 years
1	7 months	1	26 years

Mr S P **VIANT** asked how many cases of post vaccinal encephalitis came to the notice of the Ministry during 1939, and how many of them were amongst soldiers —Mr **BROWN** replied Six such cases came to the notice of my department during 1939, of whom three were soldiers

Superannuation of Nurses

Miss **IRENE WARD** asked the Minister of Pensions what was the reason for differentiation between men serving in the Forces and nurses serving in the Forces as regards assistance for meeting financial liabilities for the maintenance of superannuation benefits —Sir W **WOMERSLEY** replied I am able, on the recommendation of the War Service Grants Advisory Committee, to make a grant in any case either of a man or of a woman member of the Forces where serious hardship arising from the fact of war service is shown Any question as to contributions towards a particular scheme of civil superannuation applicable to all persons in a given class would not be a matter for my department

N H I Capitation Fees

Mr **GROVES** asked the Minister of Health whether further consideration had been given to the question of increasing the capitation fee payable to insurance practitioners, or granting them a per capita war bonus, having regard to the increased cost of living and the increased practice expenses, as well as to the fact that the fee was fixed on an insurance basis which had entirely changed by reason of so many of the healthiest insured persons being withdrawn from civil life and serving with the armed forces —Mr E **BROWN** replied This question has received full consideration I have come to the conclusion that under present conditions I should not be justified in proposing an increase in the capitation fee

Phytic Acid in Wholemeal

Mr T **LEVY** asked the Parliamentary Secretary to the Ministry of Food whether he was aware that the phytic acid in wholemeal used up all the calcium contained in it, and whether he would therefore consider the addition of calcium to the Ministry's wholemeal loaf in order to protect consumers against rickets —Major **LLOYD GEORGE** replied Without accepting everything in the question I can assure you that this suggestion is under active consideration

Letters to the Editor

ANY SUBSTITUTE FOR LIQUID PARAFFIN?

SIR,—A therapeutic problem has arisen which can, am certain, be solved by the wealth of experience existi amongst your readers, to whom I appeal for advice I many years we have learnt, and taught, that liqu paraffin is the best mild laxative available for those w constantly require something of this sort as well as f those who, owing to a temporary illness which confin them to bed, require a "maintenance dose" of so simple aperient Liquid paraffin is now very difficult obtain, what is the best substitute? An experienc practitioner to whom I appealed said that in the p paraffin days he used equal quantities of glycerin a cascara sagrada—not much help there today! But am sure that many of the more senior physicians general practice can give useful formulæ, and I trust th they will offer their advice at once, for the matter somewhat urgent

Harley Street, W 1 T **IZOD BENNETT**

THE NEUROLOGICAL APPROACH TO MENT DISORDER

SIR,—From the letters of your five correspondents April 5 it appears that Group Captain Symonds's vie on the treatment of psychiatric disorders, or that porti of it called psychotherapy, are not acceptable to t schools of medical psychology The combination "amateur and dangerous," "sterile," "reactionary "brilliant and learned," and "nothing to offer" formidable (and even confusing) if taken together an adverse comment Yet the lines * calling forth t comment seem eminently sound—"Competence in th *as in other branches of treatment*, is to be achieved o by personal experience, and with the aid of perso experience and a few fundamental principles to gu him any man who has the qualities of a good doctor c *become* a sound psychotherapist" The italics are o and we think important since by these expressions t author obviates any advocacy of indiscipline or slipsh training The fact that he emphasises experien including "the broad foundations of clinical medic with superstructure of neurology and psychiatry" is keeping with the traditions of English medicine T emphasis destroys the effect of the ambiguous adjecti "unqualified" used by one of the writers

Another correspondent has referred to the undo mented criticisms of the results of psychological tre ment, thereby turning a blind eye to Curran's paper 1937 referred to by Group Captain Symonds Furth more in his own reference to the *American Journal Psychiatry* (1941) he has abstracted three points fr the discussion of the American Psychiatric Associati on present-day trends in neuropsychiatric resear This discussion, taken as a whole, places psychothera as employed by particular schools in its right perspecti The section to which reference is made (one of seven) supported by two contributors, Dr Harry Bakwin, *pædiatrician*, and Dr Paul Schilder The latter obser "the teachings of the psycho-analytic schools however necessarily one-sided Didactic analysis carr with it the danger of proselitism and the perpetuation individual idiosyncrasies" He does suggest a po graduate training and teaching in psychotherapy wit definite curriculum of three or four years, but in la hospitals with medical schools This conforms Group Captain Symonds's opinion that "most importa of all will be the conjunction of neurologist and psych trist at general hospitals to form departments neuropsychiatry In such departments there will alwa be room for those whose natural gifts and interests them especially for psychotherapy"

The conception that psychiatric treatment is limit wholly or in greater part to psychotherapy, as practis by the rules and technique of particular groups divorc from clinical medicine, cannot be generally accept Rather is it more pleasing to some to visualise t merging of medical, neurological, and psychiatric intere i by 1 in was two-thirds filled with dust, about : cm of broth was poured into it and the mixture vigorously shaken A loopful of the washings was i plated on each of four blood-agar plates Of these e produced 1–3 colonies of hæmolytic streptococci i In all, 4 colonies were grouped, 3 falling into icefield group A and 1 into group C Of the former, ere typed and shown to belong to Griffith's type 4 t can be seen from this account that type-4 hæmolytic ptococci were found in the air and dust of a single-bed d several days after the patient carrying them had e and the ward had been sprayed with formalin and hed The reason for the presence of group-C strepto- ci is, of course, obvious The nursing staff and ward ds were being swabbed between Feb 19 and 24, and far as could be ascertained no-one carrying type-4 nolytic streptococcus entered the ward after its nfection It is most probable that the type- ptococci were implanted there by the patient R and haps also by members of the nursing staff before nfection was carried out E White (*Lancet* 1936 41) has found undiluted formalin very satisfactory lisinfecting streptococcal wards and this suggests that nalisation was more thorough in her experiments, perhaps that our isolation ward contained some nooks l crannies offering particularly good protection to the ci One reservoir of infection might have been the t which had collected high up on the windows and the ceiling and blackout curtains Unfortunately s dust was not cultured, but elsewhere in the hospital molytic streptococci have been found in dust deposited ft high on a ledge from which the blackout curtains re suspended

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* As they appear in the *Proc R Soc Med* 1941, 34 289

ondon V Glass

NARCOLEPSY

Sir,—Dr Wilson Gill's paper is of interest in recording ree further cases of traumatic narcolepsy But in cussing the ætiology of idiopathic narcolepsy—i e, rcolepsy of unknown origin—he seems to me to go far yond the ascertained facts in suggesting that narcoleptic symptoms are often the result of a localised ld encephalitis due to an attenuated form of the rus" That the complete syndrome of narcolepsy plus talepsy occasionally follows an acute attack of epidemic cephalitis there is no doubt, but Dr Gill produces no idence whatever that the relatively much more merous cases of "idiopathic" narcolepsy have any- ing to do with encephalitis Their ætiology is com- etely unknown, though by analogy with other types sleep disturbance it is reasonable to assume that the pothalamic region is involved in some way It is wise to jump to any other conclusion

One other point of his paper calls for comment—the ndition of the reflexes during cataplectic attacks any patients have now been examined in the attack, have had such an opportunity myself on several casions It is established that during the attack the ep reflexes are completely abolished, returning to rmal immediately the attack ends, but there is no nfirmation of Kinnier Wilson's observation of an tensor plantar response during the attack W J die, writing to me in 1931 said, with perhaps rather aracteristic dogmatism, "no-one has ever seen an tensor response it is almost certainly a false observa- on" This is of some importance in relation to the echanism of the attack, for it means that there is no dication of any involvement of the upper motor eurones

Of the alleged increased incidence of narcolepsy in cent years I have myself seen no evidence

Newcastle on Tyne F J Nattrass

Crookes Laboratories are issuing a synthetic mon powder They claim that 1 level teaspoonful of he powder in 2 tablespoonfuls of water gives approxi- nately 10 units of vitamin C (ascorbic acid) and 80 mg f citric acid per ml Crookes Lemon Powder is for use n the treatment of vitamin-C deficiency, but it can also e taken as a refreshing drink A bottle, costing 2*s* 10*d*, s said to be equivalent to nearly 30 tablespoonfuls of emon juice

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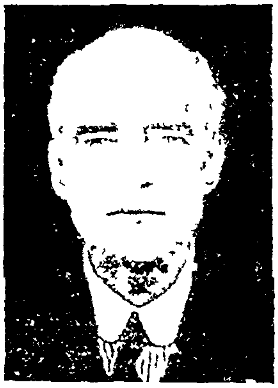
Obituary

ARTHUR STANLEY GRIFFITH

O B E M D LPOOL,, PH D CAMB, D P H

Dr Stanley Griffith died in his sleep on April 9 at his home in Cambridge He had just entered his 67th year and completed his first year of retirement from the service of the Medical Research Council A graduate of the Victoria University, of which the Liverpool medical school was then a part, he qualified in 1897 and took his doctorate in medicine in 1901 He early showed his aptitude for the research in bacteriology to which he was to devote the rest of his life, his first work being at the Thompson-Yates laboratory from 1899 to 1902 When the Royal Commission on Tuberculosis started its experimental investigations in 1903, Rubert Boyce, as one of the commissioners, brought Griffith to join Louis Cobbett at Stansted, and there, on one of the commission's farms, he spent seven happy and fruitful years The story of his ingenious and fertile labours is written in the commission's reports, volumes known throughout the scientific world as models of exact and careful statement, still standing unchallenged as to fact and convincing as to conclusions The unwonted rashness with which Robert Koch proclaimed that bovine tuberculosis was harmless to man met its deserved penalty in Griffith's observations and the question has long ceased to be matter of controversy



But the *Mycobacterium tuberculosis* and its congeners among the acid-fast bacteria had still many secrets to yield and, when the Royal Commission dissolved in 1910, its purpose fulfilled, Griffith was induced by Sims Woodhead to transfer his laboratory to Cambridge as the nucleus of the field laboratories of that university The transfer was a literal one, for the actual wooden sheds that had stood the weather already for seven years were re-erected on the site at Milton Road and have remained there ever since, the unassuming place of pilgrimage for tuberculosis workers the world over Though the shack of the pioneer was soon overshadowed by the handsome buildings of the Institute of Animal Pathology, Griffith remained content with its modest sufficiency to the end From 1911 to 1914 as Grocer's research scholar he continued the painstaking study of the natural history of the tubercle bacillus In 1914 he entered the service of the Medical Research Council as a whole-time research worker and in this service he spent the rest of his working life

And a life work was necessary, for in no field of nature study, not even in plant and animal genetics is patience more required than in the study of tuberculosis Any experiment, whether on the cultural behaviour of the tubercle bacillus itself or on its effects on the animal body may take months or years to give its answer No short cuts are possible, the next step must ever wait with its foot long suspended, and knowledge grows like the growth of the stalagmite from long-spaced droplets through the years The ingenious planning and the careful and continuous observation that are requisite can well be admired by bacteriologists accustomed to the rapid generations of other pathogens Of the many technical inventions of which he was the author, the "Griffith tube" for tissue emulsification will alone perpetuate his name

This is not the place for the full bibliography of Griffith's published papers, some 72 in number They deal with tuberculosis as it occurs throughout the animal kingdom, with the effects of artificial immunisation on resistance to tuberculous infection, and with the sources from which human tuberculosis is acquired A completed study of the bacteriology of lupus is in manuscript for publication in more settled times The preparation of therapeutic serum for meningococcal infection and of

If he is to remedy his defects the neurologist of the future must enlarge his education, being prepared to spend at least a year at a postgraduate school of psychiatry

Henley-on Thames C P SYMONDS

SIR,—Implicit in Group Captain Symonds's presidential address, and in the correspondence that has followed from supporters and critics, is the root question—Are there in fact any diseases at all of the mind *qua* mind? The late Sir Henry Head once told me that he doubted it, and I should surmise that Dr Symonds is inclined to share that view From this standpoint, all disorders of the mind are probably—as many have been demonstrated to be—disorders of the organ or instrument of the mind—namely, the brain and nervous system From this standpoint, therefore, it is to the instrument, its structure and biochemistry, that the attention of research can most profitably be devoted Changes of behaviour, speech, and presumably thought have, in so many cases, been traced to the damage done by invading organisms or their toxins, or to the over or under action of certain endocrine glands, that—from this standpoint—the balance of probability is weighted in favour of the belief that the as yet organically unaccounted-for neuroses, psychoneuroses, and insanities are similarly caused From this standpoint, therefore, " pure " psychiatry and psychoanalytic observation and treatment can do no more than sometimes help handicapped sufferers to adjust themselves to their basic, organic, or instrument disabilities They cannot *per se* remove those disabilities All this, of course, is disputed by many, if not most, " pure " psychiatrists and psycho-analysts But it would be a pity if the argument obscured Dr Symonds's practical suggestions that neurology and psychology should be one specialty and that would-be neurologists should undergo at least a year's resident training in a teaching hospital for mental disorders and would-be psychiatrists at least a year's resident training in a teaching neurological hospital This could surely do neither of them any harm, and I think it probable that most doctors would refer cases of what we at present call neurosis and psychoneurosis with far greater confidence to specialists thus trained

London, E C 1 H H BASHFORD

MYOGLOBINURIA AND THE CRUSH SYNDROME

SIR,—There are close similarities between the recently described syndrome of anuria following crushing of limbs and equine paralytic myoglobinuria I have examined the tissues in three cases of the crush syndrome and in all found hæmoglobin-like pigment—as granules, globules or confluent globules—in loops of Henle, second convoluted tubules, and collecting and discharging tubules of the kidneys This was associated with oliguria or anuria and renal failure Many muscles in the crushed limbs were strikingly pale , these and others often showed slight patchy hæmorrhage Microscopically the muscle fibres showed reduction or absence of sarcolemma nuclei, but the internal structure of the fibres was not lost and the cross striations were often accentuated The fibrillæ in many fibres were in places fragmented or disarranged Some muscles showed slight acute inflammation or hæmorrhage

Paralytic myoglobinuria occurs in horses very shortly after they have been taken out to work, following a rest period of a few days on a full working diet, especially one rich in carbohydrates The horse becomes lame in one or more limbs, and the muscles therein become firm and the urine is coloured by myoglobin Death may result in a few days and at necropsy certain muscles are very pale, like fish muscles The kidneys contain casts of the pigment and the muscles show degeneration and necrosis of the fibres Carlstrom (according to F C Minett, *Proc R Soc Med* 1935, 28, 672) found in horses that during a period of rest on a high carbohydrate diet much glycogen is stored in certain muscles When these muscles suddenly became active an excessive amount of lactic acid was produced which led to damage to the muscles However, he showed that circulatory impediment was a necessary second factor, since an excess of lactic acid alone, as occurs in fatigued muscles, would not produce the changes

In the crush syndrome the second factor, circulatory impediment, is present and is accentuated in many by marked local œdema The first factor, an excess of lactic acid and glycogen, may also be present The subjects are well nourished, and the muscles affected have had a period of enforced rest during which time storage of glycogen might occur On removal to hospital the muscles will again become active, and an excess of lactic acid might be formed which would not be removed or oxidised owing to the circulatory impediment It is while in hospital that symptoms usually first appear Camus and Pagniez (according to Minett) showed that myoglobin has a lower renal threshold than hæmoglobin, and on injection of muscle juice into animals the myoglobin appears in the urine without being visible in the blood This would explain the absence of pigment in the plasma in the crush syndrome

The pigment in the renal tubules in one of my cases will be examined spectroscopically for myoglobin, but I take this opportunity of suggesting a myoglobinuria theory for the crush syndrome so that the urine in early cases may be examined by others for the pigment

St Andrew's Hospital, Billericay J R GILMOUR

INFECTED DUST

SIR,—With regard to the rôle played by dust in cross-infection and reinfection in hospital wards, some observations may be recorded which throw doubt on the efficacy of the formalin spray and ward-cleaning, as carried out in many of our hospitals, in destroying hæmolytic streptococci in dust The observations were made in a single-bed ward 12½ ft long, 9 ft wide and 13 ft high It was situated near the general staircase with its door opening on a wide passage between two large wards It was used as an isolation ward by the maternity department, which had been compelled by war conditions to vacate its normal premises

On Feb 21 a patient, Mrs R , was admitted to the ward on the fifth day of her puerperium She had had a sharp rise of temperature to 103 6° F on the previous day Numerous hæmolytic streptococci of Griffith's type 4 were present in her vagina but there were none in the throat , she stayed in the isolation ward for 24 hours After her departure the ward was sprayed with 40% (i e , undiluted commercial) formalin, a fine spray being directed towards the floor and one foot up on the walls The ward has a good composition floor without obvious cracks and walls covered with oil paint The process of spraying took 5–10 min and about a pint of formalin was used in all During the spraying the windows and door were tightly shut, and the ordinary furniture of the ward and the blackout curtains were left in position , the bedding had, of course, been removed for disinfection After the spraying the ward remained closed for 24 hours, to allow the formalin vapour to take effect The cleaners were then allowed in and the walls and floor were washed with soap and water The height to which the mop reached on the walls was limited by the altitude attained by the cleaner without the assistance of a chair or ladder

On Feb 25 another maternity patient who had just been delivered was moved into the ward Her puerperium was uneventful, but numerous hæmolytic streptococci of Lancefield group C were found in her vagina and a few in her throat This patient, Mrs T , stayed in the isolation ward for 3 days , she left on the evening of Feb 28

Blood-agar plates were exposed in the ward between 6 and 11 A M and between 3 and 6 P M on Feb 28, and between 6 and 11 A M on March 1 Two plates were used each time, one being placed on a chair 3 ft from the bed and the other on the mantelpiece by the wall opposite the bed The ward was swept and the bed made during the exposure of the morning plates, both on Feb 28 and March 1, although the patient had left on the evening of Feb 28 All plates produced a heavy growth of various organisms, among which 1–3 colonies of hæmolytic streptococci were found in each case Of these, 9 were grouped, 3 falling into Lancefield group A and 6 into group C One of the group-A strains was typed and was found to belong to Griffith's type 4 Dust from the ward was collected on March 1 and treated in the following way A screw-capped container

RUBY THOMSON

M B EDIN　D P H

Dr Ruby Thomson, who died at her home in West Kensington on April 3 in her fifty-first year, was the daughter of Dr John Christopher Thomson, sometime Government medical officer in Hong Kong She graduated in medicine at Edinburgh in 1912, and after holding some house appointments was appointed in 1914 senior medical officer to the Staffs county council, acting as chief tuberculosis officer 1915–18, interrupted by a period as R M O at Woolwich Arsenal A year as assistant M O for maternity and child welfare in Willesden led to her call to Fulham, where she took a full share in the inauguration of the council's first maternity home, infant welfare clinics, day nursery and babies' hospital For many years she represented the local authority on the National Baby Week Council and on the Association of Maternity and Child Welfare Centres, until in June 1940 failing health obliged her to retire Her loss will be widely felt, for her honesty of purpose and enthusiastic interest in every phase of maternal and child welfare endeared her to colleagues and patients

Medical News

Society of Apothecaries of London

The following candidates, having completed the final examination, are granted the diploma of the society entitling them to practise medicine, surgery and midwifery E Crews, Guy s Hosp , M M El Garrahy, St Mungo's Coll , Glasgow , and S Wetherell, Guy's Hosp

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At the Royal Society of Medicine at 4 30 P.M on Tuesday, April 22, the section of medicine will meet to discuss the nature and treatment of the effort syndrome The openers are Dr H J Starling, Dr Paul Wood, Dr Aubrey Lewis and Dr Maxwell Jones At 5 P M on the same day there will be a general meeting of fellows of the society On April 22, at 4 15 P.M , at the section of comparative medicine Mr Frederick Blakemore, D V S.M , will open a discussion on swine influenza in the British Isles, and Miss M. G Macfarlane, Ph D , and Mr B C J G Knight, D Sc , are to read a paper on enzymic activities of *Cl welchii* toxins On April 26 the section of orthopædics will meet at the Wingfield Morris Orthopædic Hospital, Oxford Dr A. H Robb Smith and Mr J C Scott will read a paper on fat embolism, and Mr W B Foley will report on cases of septic arthritis In the afternoon at 2 P M , Dr J M Barnes and Mr J C Scott will speak on the spread of bacteria and toxins from infected wounds On the same day at 2 30 P M at the section of physical medicine Dr P Bauwens will open a discussion on the value of electrodiagnosis and electrotherapy in peripheral nerve lesions This meeting will be held at Botleys Park War Hospital, Chertsey, Surrey

An ordinary meeting of the Medico-Legal Society will be held at 26, Portland Place, London, W 1, on Thursday, April 24, at 5 P.M , when Dr J C M Matheson will read a paper on infanticide

A meeting of the subscribers of the Naval Medical Compassionate Fund will be held at 3 15 P M on April 30 at the medical department of the Navy, 64, St James's Street, London, S W 1, to elect six directors of the fund

Colonel (temporary Brigadier) C M. Finny, F.R C S , late R.A.M C , has been appointed an honorary surgeon to the King in succession to Colonel Benjamin Biggar, and Major-General O W McSheehy, M.B , late R.A.M C , in succession to Major General F D G Howell Major-General J A. Manifold, M.B , late R A M C , has been appointed an honorary physician to the King in succession to Major-General J W L Scott

The Eireann Minister of Defence has appointed nine physicians and surgeons headed by Commandant P J Delaney to come to London to study civil defence arrangements The mission will investigate medical problems arising out of evacuation and visit some of the reception areas They will study the steps which are being taken to guard against the spread of infectious disease, and also examine the arrangements for maternity homes, first-aid posts, ambulance services, base hospitals, medical supplies and blood transfusion The Ministry of Health is providing full facilities for the mission's tour of inspection

Notes, Comments and Abstracts

A PHARMACIST LOOKS FORWARD

In his address to the members of the British Pharmaceutical Conference on April 16 Mr A R Melhuish, the chairman, speaking he said, as "a workaday practising pharmacist," impressed on his colleagues the importance of personality The pharmacist, he thought, can only develop that if he trains himself so that he can express with confidence opinions worthy of attention , he will be doing service to the community if he can say with knowledge "This is rubbish," or "That is a grossly exaggerated claim," or "This is exactly the same as a preparation in the pharmacopœia " The line of development of public-health services can be seen clearly enough · the National Health Insurance Act, with medical, dental and ophthalmic benefits, will be extended as funds permit to more and more of the population Locally, medical services of local authorities will supplement the N H I service on a basis of regional hospitals There will be an absorption of the insurance committees into the local authorities' machinery, as recommended by the Rolleston Commission , just as there will be a marriage between the voluntary and the municipal hospitals In this development there will be an increasing growth of the pharmaceutical services of authorities and an increasing use of the N H I. system of supplying medicines While a widespread network of pharmacies exists, as it does today, bringing a dispensing service to everyone's door, pharmacists need not fear the spread of state dispensaries But they should cease to strive for such politically unattainable goals as reservation to the craft of the right to sell all medicines ; they will be doing far more for themselves and for the medical services of the country if they devote their energies to the fields of activity which do not involve legislation

THE RIGHT TO FITNESS

Some say—G K Chesterton was one—that we are not entitled to expect anything of life, and that it is a great piece of luck for us that we are alive at all and enjoying as many things as we do Others feel that man with his forebrain and his great opportunity has made a grievous mess of his world Of these two attitudes—the optimistic and the pessimistic, perhaps—it is, oddly enough, the pessimistic which is the more constructive, at any rate in the field of public health Dr. Aleck Bourne, speaking at the Students' Congress at Cambridge, the early part of which was noticed in our issue of April 12 spoke of good health as a right of the citizen, comparable to the right of being policed and defended The state, he said, recognises the need for universal education but does not yet admit this public right to health, inasmuch as many known causes of ill health are still tolerated He quoted the Rhondda Valley experiment as a case in point Vitamin therapy, in that area, halved the maternal mortality-rate, which had previously been nearly thrice the average rate for Britain Much of our national ill health is due to such factors as malnutrition, overcrowding, long working hours, ignorance and poverty If all curative medicine ceased and all research was held up for two years during which people were fed adequately and housed decently he believed that at the end of it the race would be healthier In his view, national ill health will not be solved by better doctoring but by eradicating causal conditions ; when that is done we shall have a chance of building people resistant to physical attack by infection and mental attack by stress

HOSPITAL READING

Before reading became a universal accomplishment many people must have dreaded a sick bed less for the pangs of disease than of boredom The Guild of Hospital Librarians find[1] that only a few hospital patients refuse books on the grounds that they "never read, thank you " ; most of them make good use of the hospital library Their choice of books is interesting ; at hospitals for sailors there is great enthusiasm for "Westerns," and the puzzled librarian wonders whether a corresponding number of cowboys yearn for a good sea anti-leptospiral serum for Weil's disease were occupations interpolated during the war years of 1914–18 , both were of immediate and very great value

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[1] *Book Trolley*, April, 1941

Though for many years Griffith was the judge of appeal in any disputed point in the biology or specific identity of acid-fast bacteria, he was scrupulous almost to a fault in giving credit to the less-experienced worker whose results were submitted for his confirmation And nothing vexed him more than the inevitable tendency for others to ascribe to him as originator new knowledge which he had " merely " had to test before it could be generally accepted His distinguished services to science and on the joint committee on tuberculosis of the Medical and Agricultural Research Councils were recognised in 1939 by his appointment to a companionship of the Order of the British Empire He was in 1927 the recipient of the Weber-Parkes prize and medal from the Royal College of Physicians Dr Griffith leaves a widow and one son, still at school

And W T M writes Griffith was no lone worker Twenty years ago I approached him detailing a scheme I had in mind for investigation in pulmonary tuberculosis The reply was one of advice, help and an offer to cooperate Thus began an association which was to lead to many joint investigations With what pleasure we visited Aberdeen and arranged a study of the types of tubercle bacilli found in pulmonary tuberculosis in a rural area, work since reported in collaboration with Dr John Smith Griffith had an international reputation , its foundation was that his work was accurate, every line written was based on observation, not what he hoped to find but what he saw His friendly contacts were numerous—in Paris, in Berlin, in Vienna, in Copenhagen—but we, north of the Tweed, who worked with him, counted ourselves as personal friends Griffith's work will live it means the saving of untold lives

WILLIAM JOSIAH SMYLY

KT , M D DUBL , F R C P & S I , F R C O G

Sir William Smyly, who died at his home at Monkstown, co Dublin, on March 19, had completed his 90th year in November last He was born in Dublin, the third son of Josiah Smyly, F R C S , his elder brother Philip later becoming P R C S I William was educated at Trinity College, where he graduated with honours in natural science and took his degrees in medicine and surgery in 1872 Having studied in Vienna, he was appointed assistant master at the Rotunda Hospital in 1877, where he held office for three years under the mastership of Lombe Atthill In 1882 he was appointed gynæcologist to the City of Dublin Hospital and two years later he was elected a fellow of the Royal College of Physicians of Ireland , since the death of Sir John Moore in 1937 he was senior fellow In 1889 Smyly returned to the Rotunda as master, in succession to Arthur Vernon Macan, and it was the energy and capability of these two masters that brought the Rotunda into line with the requirements of modern surgery The hospital had been passing through stormy times, and its high mortality from puerperal sepsis had led to a proposal that it should be closed, but Macan initiated many improvements which Smyly carried through in detail He reorganised the nursing service and insisted on the appointment of a lady superintendent He removed the confinements from lying-in wards to separate labour wards, which were occupied in regular rotation thereby allowing for frequent cleaning and disinfection It was during his mastership and largely owing to his personal exertions that a new wing for gynæcological cases was added to the hospital, including accommodation for the nursing staff This wing also included a new surgical theatre, the first modern aseptic theatre built in Ireland After leaving the Rotunda in 1896 Smyly was appointed gynæcologist to the Adelaide Hospital, on the staff of which he remained until 1920 A few years ago he retired from active practice, but he kept up his interest in the several medical institutions with which he had been connected, particularly the Rotunda and the Royal Academy of Medicine

As an obstetrician and gynæcologist Smyly cannot be said to have originated any method or procedure of outstanding importance but, as a friend has written of him, a marked sign of greatness was his readiness adopt and develop the good that others had initiate Until old age he kept up his interest in modern advanc and in discussions at the Academy of Medicine a elsewhere, revealing a progressive and open min When no longer occupied with hospital work he cou be found many mornings in the week studying the fre journals in the college reading-room Although wrote no book himself he was the inspiration of mo than one by his pupils, and he contributed ma standard articles to special journals A winning featu of his character was the encouragement he gave and t kindness he showed to younger colleagues He w willing to help, but he was also ready to learn As consultant his gentle manner and quiet confidence g encouragement to the most nervous patient and judgment seemed to be never at fault

Smyly married in 1881 Eleanor Colpoys, daughter Dr Henry Tweedy, who died in 1938 Their only s is associate professor of medicine in the University Shantung

GEORGE ROBERTSON TURNER

K B E , C B , F R C S

Sir George Turner, consulting surgeon to St George who died at his home at Hove on April 7 at the age 85, was brought up in the shadow of the hospital, his father, George Turner, M R C S , practised medici near Hyde Park Corner Turner was educated Uppingham in the time of Thring, but it was of his days as a student at St George's that he had the happiest recollections There his interest in his work whetted his industry and he carried off many prizes and scholarships But he still found time to continue his running, and in 1876 he was one of the English rugby team to play against Scotland He qualified M R C S with distinction in 1878 and received a house-appointment at St George's When only twenty-five he topped the list of successful candidates for the F R C S , and six months later, already heir-apparent to the visiting staff at George's, he was elected to the staff of t Dreadnought Hospital for Seamen at Greenwich worked there for 18 years, only retiring when he beca a full surgeon at St George's He was a capa orthodox surgeon of high personal standards and robu straightforward views Though he might on occasio to the secret delight of his fellow members, explode at committee meeting, he was an upright and cheer friend and his colleagues found him good to work wi When war broke out in 1914 he was already a ma in the R A M C (T A), but his work at Greenwich cou not be overlooked and he was appointed a consulta to the Admiralty with the rank of surgeon rear admir For his work at the naval hospitals at Chatham a Plymouth, he was later appointed K B E and C B

A P Steer Plym

At St George's Turner had lectured in anatomy a later in surgery, and he had examined for the conjo board in anatomy He published an important lectu on appendicitis and he also wrote on the radical cure hernia and contributed articles to Heath's Dictiona of Surgery, and Latham and English's System of Tre ment In his retirement he found time and pleasure less formal writings His Unorthodox Reminiscenc which appeared in 1931, were the running comment of a man of the world on a life which was medically a socially cosmopolitan, and he drew many anecdotes fro his favourite sports of racing and motoring In 19 his Mary Stuart—Forgotten Forgeries was publishe and only a few weeks ago he was once again champion Mary's cause in a letter to our columns

Sir George married Isabel Da Croz, who died in 19 They had two sons, one of whom was killed in the la war, and three daughters

ORIGINAL ARTICLES

SCIATICA

By J H Kellgren, M B Lond , F R C S , M R C P.
ASSISTANT IN THE SURGICAL UNIT AND DEPARTMENT OF CLINICAL RESEARCH, UNIVERSITY COLLEGE HOSPITAL, LONDON ,
SURGEON, E M S

Although sciatica has been widely held to be synonymous with a disturbance of the sciatic nerve, it is in fact nothing more than a clinical syndrome of which the outstanding feature is deep pain and tenderness which has a striking distribution in the buttock and leg (figs 1, 2, 3) Associated with this pain are usually a number of orthopædic signs and occasionally some neurological disturbances as follows

ORTHOPÆDIC SIGNS	NEUROLOGICAL SIGNS
Postural deformity	Absent ankle-jerk
Limitation of back movements	Sensory changes
Limitation of hip movements	Motor paralysis
Wasting of leg	Sphincter disturbances

Combinations of the signs and symptoms result in a varied clinical picture, and it is not surprising that the ause of sciatica has been sought in a variety of existing nd supposed pathological lesions around which controversy has raged The orthopædic school pointed to the postural deformity and limitation of movements, claiming that the deep tenderness was situated in the muscles Helweg 1925, Lange 1931), while the neurological school mphasised the absent ankle-jerk and sensory and motor disturbances, claiming that the tenderness was situated n the nerve trunks (Dejerine 1916, Lasegue 1864, Valliex 1847) but the arguments of neither side were conclusive Then it was gradually realised (Cowan 1923, Putti 1927) that widespread pain in the leg might be referred from a localised lesion of the back or hips This has now been confirmed by Steindler (1940), Luck (1938), (Kellgren 1939) and others who have shown that in about 70% of cases in which sciatica is diagnosed the symptoms and signs can be abolished by anæsthetising small ligamentous or muscular lesions which are usually situated n the region of the lumbosacral spine or hip This referred pain has also been studied experimentally (Kellgren 1939) and it has been shown that the deep pain and deep tenderness in the leg follow a definite segmental pattern and that they can both be reproduced by stimulating ligamentous and muscular structures in the back The orthopædic school is thus fully vindicated and it is now clear that in most patients suffering from so-called sciatica the pain is referred from a ligamentous or muscular lesion situated in the region of the hips or lumbosacral spine

The neurological theory has also received confirmation First it was found that in some cases of sciatica the cerebrospinal fluid showed an increased protein content (Sicard 1911), suggesting a disturbance of the spinal theca, and this has now been shown to result from pressure by a displaced portion of intervertebral disc (Barr 1937) The frequency of this lesion has not yet been ascertained, but it is undoubtedly quite common and probably accounts for most of the remaining cases of sciatica when those due to muscular and ligamentous lesions have been eliminated The cases of pain in the leg resulting from sacro-iliac tuberculosis or involvement of the sacral nerves by malignant growth of the pelvis are both well recognised and will therefore not be considered here

The cause of most cases of sciatica has thus been found in lesions of muscles, ligaments or intervertebral discs, but the diagnosis of the individual case is still a matter of great difficulty, and the purpose of this paper is to describe a simple form of clinical examination which facilitates diagnosis and to summarise the findings from 70 patients in whom the diagnosis was established beyond doubt

METHODS OF EXAMINATION

In the clinical diagnosis it is convenient to consider the orthopædic manifestations first and then to look for evidence of a neurological disturbance

Ligamentous and muscular lesions —The first point to consider is the distribution of the deep pain and tenderness From experimental work (Kellgren 1939) we know that all deep-lying structures give rise to referred pain which is distributed over the segmental areas shown in fig 1, while the superficial structures (such as the deep fascia and supraspinous ligaments) give rise to more local pain The patient is therefore asked to map out roughly the distribution of his deep pain and tenderness (figs 2 and 3) and this is then compared with the segmental areas, when it will be seen that the patient's pain corresponds with either a full segmental area (cases 1 and 2), a modified segmental area (case 3), a single segmental area plus a local component (case 4), or a combination of many segments (cases 5 and 6) From this information we can tell the segmental innervation of the source of pain and whether it is superficial or situated deeply in the trunk

The movements of the knee, hip, sacro-iliac joints and lumbosacral spine are then examined in turn and a note made of any pain or limitation of range[*] This procedure places the source of pain in one of these main regions knee (case 3), hip (case 5), lumbosacral spine (cases 1, 2 and 4) or in multiple regions (case 6)

The appropriate region is then carefully palpated for a painful structure, and after this has been defined it is explored with a needle point, when the full spontaneous pain should be reproduced The painful structure is then infiltrated with procaine, 2%, and in favourable cases the symptoms and signs may be completely abolished , more usually they are only greatly relieved, because it is rarely possible to anæsthetise deep-lying structures completely In the lumbosacral region the palpating finger may fail to reveal a deep-seated painful structure such as an interspinous ligament or ligamentum flavum, but these can always be reached with the exploring needle

By this simple method of investigation the source of pain can be established in most patients In a few cases however there may be clear signs of a source of pain in the lumbosacral spine although the exploring needle fails to reveal any painful structure in the back In such cases it is probable that the source of pain lies inside the spinal canal (cases 7, 8, 9, 10 and 11) and displacement of an intervertebral disc is to be suspected

Displaced intervertebral disc —Occasionally there may be clear signs of an intraspinal source of pain but no evidence of nerve involvement In such cases the source of pain is probably the posterior common ligament (case 7) More often there is some evidence of pressure on a nerve root , thus an area of skin pain (Lewis 1938) may be added to the deep-pain area, and there may be sensory disturbances similar to those found by Lewis and Pochin (1938) in their recent studies on nerve paralysis by pressure and ischæmia In these experiments they found that the sense of touch failed early, together with motor power, while pain failed later and delayed pain was not lost till the very end They also observed that before the pain sense failed there was a period of hyperalgesia *Thus the earliest* signs of nerve pressure will be periods of numbness, recovering with tingling but without detectable sensory loss (case 8) The next stage consists of hyperalgesia combined with loss of light touch (case 9), then loss of all sensation except delayed pain (case 10) and finally complete sensory loss (case 11) These sensory changes are distributed over the dermatome corresponding to the root or roots pressed upon (figs 1 and 3) and they form the most reliable evidence of nerve involvement[†] yarn Edgar Wallace is a favourite author, though some complain that thrillers fall short of their personal experience Philosophy, essays, religion and feminine memoirs are a drug on the market *In addition to* taking round the book trolley librarians collect and distribute illustrated papers and magazines, provide books in foreign tongues for our allies, hoard up discarded books for infectious cases, bind afresh those which are worn by use, keep sheet music for convalescents who want to play the piano, provide paper and string for parcels, register letters and undertake shopping commissions After Dunkirk they had their hands full writing letters for the wounded, telephoning and telegraphing their relations and even visiting those who lived close at hand

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[*] The knee and hip are tested in the usual way, and the sacro iliac joints by compressing and distracting the iliac crests The lumbosacral spine is examined as follows flexion side flexion and rotation are tested with the patient standing the knees being straight to eliminate hip movement in addition flexion is tested with the patient lying supine by raising each leg separately with the knee extended , finally, extension is tested with the patient lying prone

[†] Occasionally patients with a simple ligamentous source of pain complain of widespread areas of numbness in which pin prick feels less sharp but there is no loss of touch or any other sensation (case 2) These areas are ill defined and correspond roughly with the distribution of the referred deep pain and *tenderness* They are easily distinguished from the sensory changes due to pressure on a nerve

The last eighteen months have produced other problems Librarians found that emergency hospitals, especially those of the hut type, were often unable to provide a room to hold books, there were no ladies' committees and no funds, and timber was short, so that cupboards and shelves were luxuries They had to become inventive Some have stacked books in packing cases and card indexes in boot boxes, and others have found sanctuary for their volumes in apple-racks, boot-racks and wardrobes. Where shelves can be had wire netting doors can be padlocked over them Air-raid casualties have also given scope to their ingenuity, patients with burned hands cannot hold a book and book rests must be improvised The Red Cross have provided some from their stores, and a girls' technical school is making a further supply The guild have good friends in the book trade, the Westminster depot which works at collecting and distributing books and magazines has the loan of free premises from one publisher, free glue and cloth from others, boards and paper from others, and publicity and advice from the National Book Council

NEW FORM OF CHADWICK LECTURE

LAST autumn when the sequence of public lectures arranged by the Chadwick trustees was interrupted by war conditions the trustees offered prizes of £100 and £50 for the two best essays on the construction and management of air-raid shelters The first prize was awarded jointly to Dr S L Wright and Mr Philip O Reece of Wembley, who were then invited to lecture at the London School of Hygiene on April 8 Dr Wright discussed the dangers of epidemic disease associated with dormitory shelters for large numbers of persons by reason of droplet infection and infected dust He advocated glass cellular cubicles if feasible, spraying the air with hypochlorite, the use of muslin or Cellophane respirators, and adequate lighting to dispel gloom, the maintenance of mental and physical fitness being important to fortify resistance to infection Mr Reece exhibited plans of shelters for 500 people in sections radiating from a central tea-room, he preferred deep to surface shelters and drew attention to the analogy between earth tremor from bombs and from earthquakes He advocated reinforced concrete for the construction of surface shelters, which should prove useful after the war for social centres or isolation hospitals Sir William Collins who presided said that the public with their herd instinct appeared to have been wiser than some politicians in preferring deep shelters and tubes to Anderson shelters and so-called mouse-traps, while those who foretold serious outbreaks of epidemic disease in communal centres had been discomfited Chadwick's "sanitary idea" was, he felt, apposite to the new problems raised by air-raid shelters

SUBCUTANEOUS IMPLANTATION OF THYROXINE

DURING the last two years experiments with several hormones have shown that subcutaneous implantation of the solid material is followed by a gradual absorption of the active principle at a much slower rate than with other methods of administration so that the effect is prolonged for days or weeks instead of lasting for a few hours Addressing the British Pharmaceutical Conference Mr Frank Wokes, Ph D (College of the Pharmaceutical Society) described the results of experiments with thyroxine in male guineapigs. His observations lead him to conclude that great caution should be employed in the implantation of thyroxine tablets in human subjects and that the oral administration of thyroid appears to be much safer and more effective

Appointments

BREWER, H L, M B Melb, F R C S, R S O at the Corbett Hospital, Stourbridge

Colonial Service —The following appointments are announced —

APTED, F I C, M B Lond, D T M & H M O, Sierra Leone,
CHELLAPAH, S F, M R C S, D P H, D T M & H D M S S, Ceylon
COCHEMÉ, M A X, M B Camb, D T M & H M O, Malaya,
HARTHAN, G D, M B Manc, D T M & H M O, Nigeria,
HAWE, A J, M D Lpool, M R C P, D T M & H Senior M O Gold Coast,
MACLURE H L, M R C S, D T M & H. M O, Sierra Leone,
THOMAS, E J., M R C S pathologist Northern Rhodesia,
TURNER L H, M R C S, D T M & H M O, Malaya, and
TYSON, W J, B M Oxfd, D T M & H M O, Malaya

Births, Marriages and Deaths

BIRTHS

ACTON —On April 9, the wife of Dr Hugh Acton, of Okehampton Devon—a son

JACKSON —On April 9, at Lincoln, the wife of Squadron Leader R C Jackson, R A F M S —a daughter

JORY —On April 7, at St Albans, the wife of Mr Norman Jory, F R C S —a daughter

MACKIE —On April 12, the wife of Dr Carmichael Mackie, of Stourport on Severn, Worcestershire—a son

ROCYN JONES —On April 2, the wife of Dr Gwyn Rocyn Jones of Llantarnam, Mon —a daughter

MARRIAGES

GELL—GORDON —On April 5, at Cambridge, Philip G H Gell, M B, to Albinia Susan Roope Gordon

IBBOTSON—CARTER —On April 4, Colin Ibbotson, M B, lieutenant, I M S, to Irene May Carter

DEATHS

BOON —On April 12, James Ebenezer Boon, L R C P E of Priory Road, Bedford Park, W

COLLINGWOOD —On April 11, at Clifton, Percy Hildebrand Collingwood, *L S A, lieut colonel,* R A M C *retd*

FIGG —On April 10, suddenly, at Southampton, Major C A Figg, O B E, R A M C, retd

FORBES —On April 8 at Tunbridge Wells, James Graham Forbes M D Camb, F R C P, D P H, aged 68

FORSYTH —On April 10, in London, David Forsyth, M D, D Sc Lond, F R C P

GILLISON —On April 6, at Frimley, Gordon Colebrook Gillison, M B Edin, of Kingwood, Henley-on Thames

GRIFFITH —On April 9, Arthur Stanley Griffith, C B E, M D Lpool, Ph D Camb, D P H, aged 66 years

HALL —On March 29, at Belfast, Robert Hall, L R C P E, aged 69

O'FLAHERTY —On April 8, at Westward Ho, Devon, Austin Romuald O'Flaherty, M R C S, lieut colonel, R.A M C retired

SNELL —On April 6, James Eric Boobbyer Snell, M B Camb, Edwalton, Nottingham, aged 63

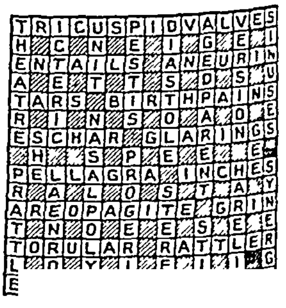
THOMSON —On April 3, in London, Ruby Thomson, M B Edin, D P H

ROYAL ALBERT EDWARD INFIRMARY, WIGAN —In the appointment of a House Surgeon (A) at this hospital the salary, which is at the rate of £150 per annum, with full residential emoluments, was given incorrectly in the advertisement owing to an unfortunate misprint

MESSRS BURROUGHS WELLCOME have added *p*-benzyl phenyl carbamate to their range of products under the name of Oxylan in the treatment of threadworm infestation It is free from undesirable side-effects and is readily tolerated by children It destroys the parasites in situ instead of paralysing or dislodging them The product is issued in bottles of 20 and 100 tabloids of gr 7½

SULPHATHIAZOLE is now *available without charge* to doctors and hospitals at 62 laboratory supply stations in New York State for the treatment of pneumococcal infections Its distribution follows *acceptance of the drug* by the council of pharmacy and chemistry of the American Medical Association

THE LANCET CROSSWORD LAST WEEK'S SOLUTION



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CASE 6 —A soldier of 35 who had suffered from right atic pain for 3 weeks ; 10 years previously he had been n bed for 3 months with pain and stiffness of the whole back nd during the last 5 years he had suffered from weakness of us back. Pain deep only and multi segmental, being present n the left leg as well as the right and also in the groin and capular regions , knee movements full, hip flexion and rotaion full but abduction and adduction painful and limited acro iliac joints painful , back very stiff, with only slight novement in the lumbar region and none in the thoracic eg raising right 65°, left 55° A number of painful spots vere found at various levels in the back. The pain was thus ising from multiple lesions in the hips, spine and sacral iliac oints No sensory changes, no muscular weakness or wasting, oth ankle jerks brisk. Radiography shows slight changes of nkylosing spondylitis

CASE 7 —A housewife of 37 who had suffered from right ciatica for a year , 2 years previously she " felt something go ' in her back while moving heavy furniture and since then had had pain in the midline of the back Pain deep only, S1–2 in distribution plus local pain over lumbosacral junction Movements of knee, hip and sacro-iliac joints normal all back movements limited (especially flexion) by pain in leg Leg raising, left 90°, right 25° Palpation over lumbosacral junction gave local pain only and exploring needle failed to find any deep source of pain Infiltration of the deep structures at this level with 20 c cm of procaine relieved the local pain, but left the pain in the leg and the other signs unchanged. No sensory disturbances Some wasting of right leg, right ankle jerk absent Radiography showed narrowing of L5–S1 disc

Laminectomy - theca and nerve-roots appeared normal but there was a tense bulging of the posterior common ligament over the L5–S1 disc, and when this was incised a large piece of necrotic nuclear material escaped from beneath it No return of pain after operation , 2 weeks later back movements full

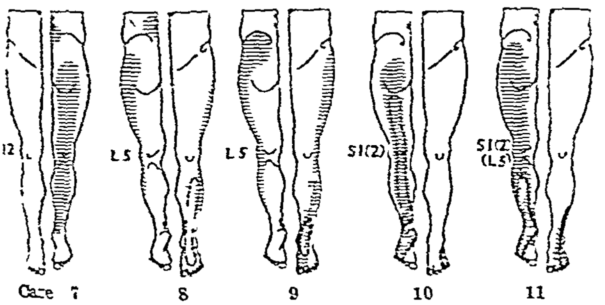

FIG 3 —Distribution of deep pain and tenderness (hatching) and skin pain (dots) in 5 cases with displacement of an intervertebral disc. Limits of sensory changes are outlined tingling by dotted line hyperalgesia with loss of light touch by interrupted line, and complete anæsthesia by continuous line

CASE 8 —A gardener of 37 who had suffered from recurrent attacks of backache and left-sided sciatica since he injured his back while lifting a barrow 5 years previously Pain deep only, L5 in distribution with local component in midline of back. Tingling in distribution of L5 dermatome Movements of knee, hip and sacro iliac joints normal , back movements all slightly limited. Leg raising, right and left 65° The exploring needle failed to find any painful structure in the region of the fifth lumbar vertebra and infiltration of these structures with 20 c cm of procaine only relieved the local pain, leaving the other signs unaltered No sensory loss, but stroking of the skin in the region of L5 dermatome gave rise to tingling Slight wasting of left buttock but no weakness of leg , both ankle-jerks brisk. Radiography showed narrowing of L4–5 disc

Laminectomy showed thickening of dura which was firmly adherent to a knuckle of fibrous tissue protruding from L4–5 disc No return of pain after operation , 2 weeks later back movements full

CASE 9 —A stamp-dealer of 55 who had suffered from recurrent attacks of left-sided sciatica for 10 years Deep pain of L5 distribution with skin pain in region of L5 dermatome Movements of knee, hip and sacro iliac joints normal, back movements all greatly limited by pain in leg and foot Leg raising, right 50°, left 30° Palpation and the exploring needle failed to find any painful structure in the back. Infiltration of the structures around the 5th lumbar vertebra with 20 c cm of procaine left the symptoms and signs unchanged In the region of L5 dermatome there was an area of hyperalgesia combined with loss of light touch General weakness and wasting of left leg Left ankle jerk slightly weaker than right Radiography showed narrowing of L4–5 disc

Laminectomy showed thickening of dura in region of L5 root which was displaced by a nodule of nuclear material which had escaped from the back of L4–5 disc No return of pain after operation , 3 weeks later back movements full

CASE 10 —An electrician of 33 years who had suffered from left sided sciatica for 6 weeks , 9 years previously he had had a similar attack which lasted for 8 months Deep pain of S1–2 distribution with skin pain in region of S1 dermatome , tingling in S2 dermatome Movements of knee, hip and sacro iliac joints normal Back movements full except flexion which is greatly limited by pain in foot Leg raising, right 90°, left 35° Exploration of lumbosacral junction with needle found no source of pain, and infiltration of this region with procaine 20 c cm left the symptoms and signs unchanged In the region of S1 dermatome there was loss of touch and some hyperalgesia the pain being delayed in the distribution of S2 dermatome there was no sensory loss but all stimuli gave an increased response with tingling There was weakness and wasting of the left leg and the left ankle jerk was absent Radiography showed narrowing of L5–S1 disc

Laminectomy showed some thickening of the dura in the region of first sacral root, and a large fragment of disc substance was found lying free in the spinal canal behind L5–S1 disc No return of pain after operation All sensory changes gone on following day , 3 weeks later back movements full

CASE 11 —An acrobatic dancer of 22 who had suffered from left sciatica for 6 months after a fall of 14 ft in which she injured her back. Deep pain S1–2 in distribution with local component over lumbosacral junction ; skin pain in region of S1 dermatome Movements of knee, hip and sacro-iliac joints normal Back movements limited, particularly flexion Leg raising, right 130°, left 45° Exploration of the lumbosacral junction revealed a source of pain in the interspinous ligament After infiltration of this with 10 c cm of procaine there was some relief of pain and the back movements became somewhat freer Wide area of complete anæsthesia including the whole first sacral dermatome, and an even larger area of loss of touch encroaching upon the dermatomes of L5 and S2 Delayed pain only could be obtained from 2nd and 3rd toes Great weakness of all movements of the ankle and toes , left ankle jerk present though weaker than right Radiography showed narrowing of L5–S1 disc with spondylolysis of 5th lumbar vertebra

Laminectomy showed considerable thickening of the dura and flattening of the nerve-roots which were firmly adherent to a mass of fibrous tissue which was attached to the back of L5–S1 disc After operation the neurological signs recovered completely in 3 days, but 3 weeks later the back movements were still not full

DISCUSSION

The findings in 70 patients suffering from so-called sciatica in which a definite diagnosis has been established are shown in the table It will be noticed that ligamentous and muscular lesions form by far the commonest source of pain (50 cases) and that in only 22 of these did the radiogram reveal any change in the underlying bones and joints Of the 15 cases with displacement of the intervertebral disc 13 showed evidence of root pressure while in 2 there was none the pain resulting from a disturbance of the posterior common ligament The remaining 5 cases with nerve involvement resulted from miscellaneous nervous diseases while in no case could the symptoms and signs be ascribed to an interstitial neuritis of the sciatic nerve so that we are forced to conclude that this condition is rare, if indeed it exists at all

Much interest has recently been shown in the disturbances produced by disruption of the intervertebral discs but the mechanism by which such symptoms are produced has remained obscure The mechanical result of disruption of the nucleus pulposus is a narrowing of the intervertebral space with the production of a localised kyphosis (fig 4) From our investigations it seems that this may give rise to a variety of clinical syndromes The stretched supraspinous ligament may become painful producing local pain in the midline of the back together with slight limitation of flexion and extension of the spine , then the interspinous ligament and ligamentum flavum may become painful giving rise to deep pain of

Muscular paralysis is only of value when it is severe, since muscle ,weakness and wasting are not uncommon in simple orthopædic cases

The ankle-jerk is of more value but it may occasionally be absent in cases of simple referred pain distributed over the first sacral segment, and it is sometimes brisk in cases with obvious nerve involvement

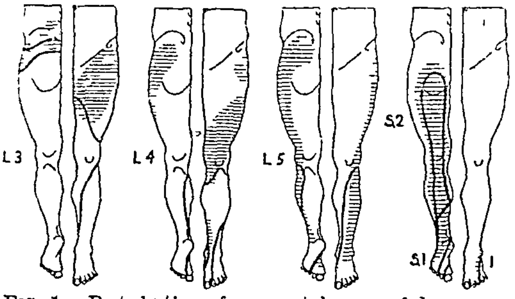

FIG 1 —Distribution of segmental areas of deep pain and tenderness in leg (hatching) and limits of corresponding dermatomes (continuous line) (For the segmental areas in subjects with 4 or 6 lumbar vertebræ see Kellgren, J H *Clin Sci* 1939, 4, 35)

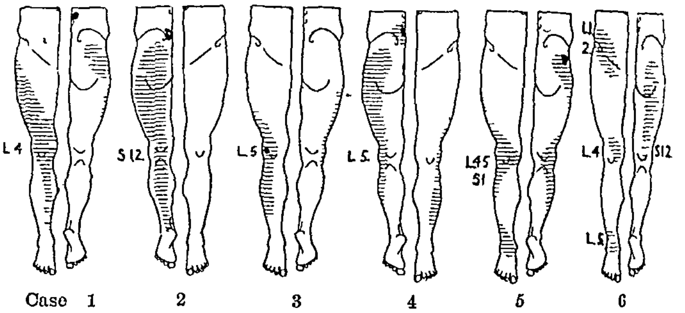

FIG 2 —Distribution of deep pain and tenderness (hatching) and its point of origin (black) in 6 cases with a ligamentous or muscular source of pain

Thus the full clinical picture of a displaced intervertebral disc consists of deep pain and tenderness in the leg with a full segmental distribution, together with some sensory disturbance in the distribution of the appropriate dermatome, in addition, there are the orthopædic signs of a source of pain in the lumbosacral spine but no demonstrable painful structure in the muscles or ligaments of the back Such aids to diagnosis as the finding of a narrowed disc-space in the radiogram and an increase of protein in the cerebrospinal fluid are now well known The level of the displacement can be deduced from the segmental areas involved if one remembers that it is always the root below the level of the displaced disc which is maximally affected Thus if L4–5 disc is displaced, the fourth lumbar root escapes from the spinal canal above the protrusion while the fifth lumbar root passes directly over it and is maximally disturbed, though the sacral roots may also be involved if the prolapse is a large one The intrathecal injection of Lipiodol is thus superfluous

Other nervous diseases —Very occasionally cases diagnosed as sciatica present clear evidence of nerve involvement but a complete absence of orthopædic signs, the movements of the limbs and back being quite free This clinical picture may result from various nervous diseases (see table) which are not likely to be confused with displacement of an intervertebral disc

Cases	Source of pain		X ray findings	
50	Ligamentous and muscular lesions		Normal	28
			Narrow disc space	5
			Ankylosing spondylitis	5
			Secondary carcinoma (spine)	3
			Spondylolisthesis	2
			Unilateral sacralisation	1
			Osteoarthritis (hip)	2
			Old fracture (femur)	1
			Coxa vara	1
			Coxa valga	1
			Osteoarthritis (knee)	1
15	Displaced disc		Narrow disc space	15
5	Miscellaneous diseases—			
	Herpes zoster	2	Normal	5
	Intrathecal tumours	2		
	Polyneuritis	1		

Findings in 70 cases of so called sciatica

CASE-HISTORIES

CASE 1 —A theatrical agent of 46 who had suffered from right sided sciatic pain for 3 weeks For 20 years he had suffered from recurrent backache, and as a child he fell from a height on his bottom Pain deep only L4 in distribution, movements of knee, hip and sacro iliac joints full and painless, back movements all limited, especially extension Leg raising right 45°, left 55° , all movements limited by pain in leg (this places the source of pain in the lumbosacral spine) Pain in leg reproduced from a painful spot below and to right of spine Exploring needle showed this to be in region of inter spinous ligament and ligamentum flavum Procaine, 15 c cm , injected in this region gave relief of pain and nearly full range of back movements No sensory changes Slight wasting of right thigh, right knee jerk absent, left knee jerk and both ankle jerks brisk Radiography showed narrowing of L4–5 disc

CASE 2 —A labourer of 31 who had suffered from left sided sciatica for a year Pain deep only, S1–2 in distribution, movements of knee, hip and sacro iliac joints full and pain less , back extension full but flexion and side flexion limited by pain in leg Leg raising, right 85°, left 35° , the source of pain is thus in the lumbosacral spine Pain in leg reproduced from painful spot medial to left postero superior iliac spine , with needle point this was localised to upper border of sacrum and the adjoining articular process , these structures were *infiltrated with 20 c cm of procaine with complete relief of pain* , leg raising now, right 85°, left 75° *Over the distribution of the deep pain there was an indefinite area of numb* ness in which pinprick felt less sharp, but there was no loss of sensation and this numbness disappeared immediately the source of pain was anæsthetised No muscle wasting in leg, both ankle jerks brisk Radiography showed a normal lumbosacral spine

CASE 3 —A lady of 64 who for 9 months had suffered from right sided sciatica of gradual onset Pain deep only, of modified L5 distribution centred over knee , movements of back, hips and sacro iliac joints full and painless Leg raising, right and left 130° , right knee flexion limited by 60°, extension by 5° , all movements give full pain in leg , the knee is thus the source of pain Pain in leg reproduced from spot near upper and outer angle of patella Procaine, 5 c cm , injected in this region abolished the pain, but knee flexion was still limited by 30° No sensory changes, some wasting of right thigh, both ankle jerks present Radiography showed moderate osteo arthritis of both knees

CASE 4 —A clerk of 41 who had suffered from left sciatica for 7 months , 6 years previously he injured his back in an accident Pain deep only, L5 in distribution, plus a small local patch over lumbosacral junction , movements of knee, hip and sacro iliac joints full and painless Back side flexion and rotation full but flexion and extension limited by pain in leg Leg raising, right 75°, left 65° , the spine is thus the source of pain *Pressure below L5 spine gives local pain* only, but needle inserted at this point gives full pain in leg from the interspinous ligament Infiltration of these structures with 5 c cm of procaine gave relief of pain and a full range of back movements , leg raising, left and right 85° No sensory changes or wasting in leg Both ankle jerks brisk Radiography shows narrowing of L5–S1 disc

CASE 5 —A greengrocer of 50 who had suffered from right sciatica for 4 weeks , 3 years previously he had had a similar attack lasting 3 months Pain deep only, multi segmental in distribution including L4–5 and S1 , movements of knee, back and sacro iliac joints full and painless Leg raising, right and left 90° , right hip flexion and extension full but abduction, adduction and rotation limited and painful , the hip was therefore the source of pain Pain in leg reproduced from painful spot in muscles just above right great trochanter Infiltration of these muscles with 20 c cm of procaine gave complete relief of pain and a full range of hip movements No sensory changes or muscle wasting, both ankle jerks present Radiography shows no abnormality of hip joint

Serum mixture	Red cells	Dilution of absorbed sera 1/2	1/4	1/8	1/16	1/32
A (3 c.cm.) B (3 c cm)	A	+	±	–	–	–
	B	–	–	–	–	–
A (3 c cm) B (1 5 c cm)	A	+	–	–	–	–
	B	–	–	–	–	–
A (3 c.cm) B (1 c cm)	A	±	–	–	–	–
	B	–	–	–	–	–
A (3 c.cm) B (0 75 c cm)	A	–	–	–	–	–
	B	–	–	–	–	–
A (3 c cm) B (0 5 c.cm)	A	–	–	–	–	–
	B	–	–	–	–	–
Serum A (original titre)	A	–	–	–	–	–
	B	+++	++±	+±	±	–
Serum B (original titre)	A	++±	++	+±	±	–
	B	–	–	–	–	–
O (1 c.cm) A (4 c cm) B (1 c cm.)	A	–	–	–	–	–
	B	–	–	–	–	–
O (2 c.cm) A (4 c cm) B (1 c.cm)	A	±	–	–	–	–
	B	–	–	–	–	–
O (3 c.cm.), A (4 c cm.), B (1 c.cm.)	A	+	±	–	–	–
	B	±	–	–	–	–
O (4 c cm.) A (4 c cm) B (1 c.cm.)	A	+±	+	±	–	–
	B	+	±	–	–	–
O (4 c.cm) A (4 c cm) B (2 c.cm)	A	+±	+	±	–	–
	B	±	–	–	–	–
Serum O (original titre)	A	+++	+++	+++	++±	+
	B	+++	+++	++±	+	±
Serum A (original titre)	A	–	–	–	–	–
	B	+++	++±	++	+±	±
Serum B (original titre)	A	++±	++	+±	±	–
	B	–	–	–	–	–
O (3 c.cm.) A (4 c cm) B (2 c cm.), AB (1 c cm)	A	+	±	–	–	–
	B	–	–	–	–	–
Serum AB (original titre)*	A	–	–	–	–	–
	B	–	–	–	–	–

* For original titres of O, A and B see above

TECHNIQUE

The following technique has been used

Plasma from citrated blood of the bank was separated from the red cells with sterile precautions, the fibrin was removed after addition of 8% solution of calcium chloride, 2 c cm. for every 100 c cm of plasma (Clegg and Dible 1940), and the serum was passed through a Seitz bacterial filter The sera to be absorbed were mixed in varying proportions in test-tubes and left at room temperature for at least 48 hours in order that absorption might be complete Sterile precautions were observed, since it was found that contaminated sera were liable to develop non specific agglutinins (Thomsen phenomenon) The mixtures of sera were tested for absorption of iso agglutinins against fresh washed red cells of groups A and B Each sample of serum mixture was put up in a series of dilutions of from 1 2 to 1 32 in normal saline, as shown in the table, in test-tubes of 7 mm diameter Final readings were made after two hours standing at room temperature by transferring a small drop of the serum red cell mixture to a plain slide and reading under the low power (Landsteiner 1932) All sera previous to mixture were tested for iso-agglutinin titre, these readings are shown at the bottom of each section of the table

DISCUSSION

Our observations lead us to believe that in sera A and B a high agglutinogen content runs with a high iso-agglutinin titre, such high titre sera are the most useful for purposes of absorption. Sera having a high agglutinogen content absorb the appropriate iso-agglutinins almost instantaneously at room temperature If the agglutinogen content is low absorption may be complete only after some days of standing. A few experiments indicate that absorption is hastened by placing the mixed sera at 37° C for a few hours

Experiments have indicated that both the iso-agglutinin and agglutinogen content of individual sera vary within wide limits On this account it is difficult to determine the generally optimal proportions for mixture for the purposes of absorption of the iso-agglutinins Our results indicate that as a general rule the best proportions for cross absorption between sera A and B is between 4 and 5 parts of A to 1 of B Serum AB though sometimes containing large amounts of the two agglutinogens, is occasionally deficient in A (group A₂B) On this account it is alone not very reliable for the absorption of the agglutinins from O serum In order to get if not complete absorption, at least a considerable reduction of its agglutinin titre serum O can conveniently be pooled with sera A and B in the proportions of 4 of A and 1 of B to 2 of O or 1 of AB, 4 of A and 2 of B to 3 of O

CONCLUSIONS

Agglutinogens A and B occur in the plasma and serum of blood as well as in the red cells The use of red cells for absorption of iso-agglutinins from serum or plasma for transfusion purposes is therefore not necessary The iso-agglutinins may be removed or their titre reduced to a low level by the admixture of serum or plasma of appropriate groups in suitable proportions

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PEPTIC ULCER IN THE ROYAL NAVY

SYMPTOMS AND PATHOLOGY

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THE significance of any disease in the fighting services depends on its capacity to cause unfitness for duty The importance of gastric and duodenal ulcer in this respect has long been recognised in the Royal Navy In 1931 Burdett reviewed the returns between 1911 and 1929, and commented on the growing frequency of the disease among sailors He suggested that the cause might be the enormous diminution in physical effort which had been the outstanding change in naval life since 1911 In 1935 the report of the Medical-Director General on the health of the Navy states (p 11) "Among diseases of the stomach, dyspepsia accounted for 104 cases with 4 invalidings, gastro-enteritis for 315 cases and gastric ulcer for 97 cases with 10 invalidings and 5 deaths The most prolific cause of wastage '—i e among diseases of the digestive system—" was duodenal ulcer, which in 102 cases produced 31 invalidings and 3 deaths '

The expansion of the service since the outbreak of this war seems to have been accompanied by a disproportionate rise in the incidence of gastric and duodenal ulcer Full statistics are not available but at the moment it seems desirable to make a study of the war-time picture presented by the disease This has already been done in the Army by Payne and Newman (1940), Willcox (1940), and Morris (1940) Some of the questions to which answers might be sought are —

(1) In what way, if any, do the symptoms of war time gastroduodenal dyspepsia differ from those seen in peacetime and in civil life ?

(2) What is the relative frequency of (*a*) simple ulceration, (*b*) complications such as perforation hæmatemesis, pyloric stenosis, and so on, and (c) neuromuscular secretory or functional disorders ?

(3) When should dyspeptics be returned to duty or invalided as unfit for service ?

It was with this object in view that the following work was done A hundred sailors and marines formed the material for study All were suspected of having ulcer, and the chief cause of their disability was pain in the segmental distribution together with great limitation of extension of the spine Alternatively, the disrupted nucleus may be displaced backwards so that with each movement of flexion it distends the posterior common ligament, this gives rise to chronic pain of segmental distribution together with great limitation of flexion of the spine Finally the disc substance may escape into the spinal canal and produce a disturbance of the theca and nerve-roots which may result in sensory and motor changes and an increase of protein in the cerebrospinal fluid

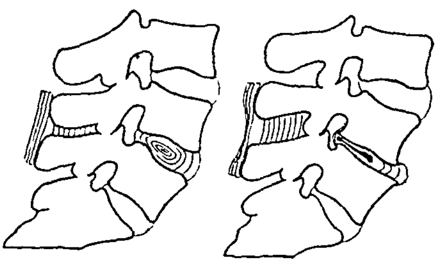

FIG 4—Schematic drawing of lumbosacral spine to show mechanical disturbances which may result from disruption of an intervertebral disc On left is the normal spine, on right the disc between the 4th and 5th lumbar vertebræ has collapsed It will be noted that the corresponding supraspinous and interspinous ligaments are greatly stretched, and that the necrotic nuclear material is distending the posterior common ligament

So many forms of treatment have been advocated for so-called sciatica that one hesitates to discuss the subject We have found, however, that most of the cases with simple ligamentous or muscular lesions recover rapidly with rest in bed combined with infiltration of the source of pain with novocain, though this infiltration may have to be repeated at weekly intervals In chronic cases it may also be necessary to re-educate the muscles and joints by means of simple exercises In the cases with displacement of an intervertebral disc, the present vogue is to remove the displaced portion by a limited laminectomy without opening the spinal theca There is general agreement that the immediate results of this operation are satisfactory, but it has not been practised long enough for the late results to be assessed, and we know that such patients may recover with rest, at any rate for a number of years (case 10)

SUMMARY

A method of clinical examination is described by which an accurate diagnosis can be made in cases of so-called sciatica

Out of 70 cases investigated by this method, 50 were found to be suffering from ligamentous or muscular lesions, 15 from displacement of an intervertebral disc and 5 from various neurological diseases, while in no case could the condition be ascribed to an interstitial neuritis of the sciatic nerve

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"   to day, there are the pure biologists, holding the academic posts, and the others, the applied biologists, holding posts ranging from research institutes to commercial firms Research institutes may be attached to universities, but, even so, their staffs are often regarded as slightly tainted The whole gamut of appointments from research institutes to industry is, of course, staffed by men and women trained in the universities But, unfortunately, this is a one way traffic system, and only in the rarest cases is there appointment of men from the applied side to the university staffs   So   the credo of academic men is accentuated that they are the fount and inspiration not only of all knowledge but also of all application   Occasionally, a mouse like squeak of dissent arises, but the state of academic auto hypnosis is little disturbed "—*Nature*, April 12, 1941, p 428

ABSORPTION OF ISO-AGGLUTININS FROM POOLED PLASMA OR SERUM

BY

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WITHIN the last few months the value of human serum or plasma in the treatment of shock without exsanguination has become widely appreciated, large quantities of both and particularly of the latter are being collected and stored and much has already been given to casualties, generally with good results Both plasma and serum have the obvious advantage over blood of being suitable for indefinite storage in readiness for immediate use Both plasma and serum, however, contain the naturally occurring iso-agglutinins in a titre modified only by the degree of dilution to which the blood was subjected by the anticoagulant used at withdrawal On theoretical grounds introduction of these iso-agglutinins into the circulation of subjects whose red cells are susceptible to their action would seem to be fraught with danger, and the larger the amount of serum or plasma infused the greater the danger

All those concerned with the preparation of serum or plasma for infusion have been alive to this danger In some blood-transfusion services attempts have been made to remove the iso-agglutinins by absorption with red cells of suitable agglutinogen content This procedure presents various technical difficulties—for instance, the occurrence of hæmolysis in the mixed bloods and the difficulty of recovering the plasma from the mixture Others have taken advantage of the absence of iso-agglutinins from blood of group AB and have used donors of this group as sources of plasma or serum for storage, but donors of group AB are rare and their blood when withdrawn is almost useless for transfusion purposes until the red cells have been removed Other workers have aimed at the dilution of the iso-agglutinins by the pooling of plasma of various groups, usually A and B

In practice no catastrophes have so far been reported as resulting from the infusion of theoretically incompatible serum or plasma, and there seems to be a growing tendency to disregard this possibility That the infusion of theoretically incompatible plasma is capable of giving rise to trouble was demonstrated to one of us (S C D) by a case in which a pint of plasma of group O was given to a patient of group A The infusion was given rapidly and was followed immediately by symptoms of incompatibility in the shape of back pain, a sense of constriction of the chest and gasping respiration These quickly subsided with adrenaline and morphia This case did, however, seem to indicate that the iso-agglutinins cannot be altogether disregarded especially if large quantities of serum or plasma are to be given

Few workers using pooled plasma for transfusion seem to have paid much attention to the iso-agglutinin titre of the final product One of us (B L D V), while engaged on the filtration and bottling of pooled serum, observed that the titre of the iso-agglutinins in the final product was in many instances far below the original titre, even allowing for the dilution entailed by the pooling This reduction of the iso-agglutinin titre was noted particularly in mixtures of sera A and B The same phenomenon has also been noted and to some extent investigated by Levinson and Cronheim (1940), but they do not offer any explanation of it

Searching for an explanation of this phenomenon we were reminded of the fact that the agglutinogens A and B are not confined to the red cells but are common to most of the tissues of the body, including the blood-plasma and serum (Schiff 1933) Serum or plasma A should then be capable of absorbing the anti-A iso-agglutinins, and serum or plasma B the anti-B iso-agglutinins Examples from numerous observations on this [illegible] in the table mination of 30 patients showed that the average red count was 4 890,000 and the hæmoglobin 98% highest figures recorded were red cells 6 250,000 Hb 115% the lowest red cells 4 110,000 and 73% About one patient in every five (23 cases)

LE I—ACTUAL WEIGHTS OF 29 PATIENTS, COMPARED WITH AVERAGE WEIGHTS FOR HEIGHT AND AGE *

	Height (in)	Age	Actual wt (lb)	Wt per table (lb)	Difference	Case	Height (in)	Age	Actual wt (lb)	Wt per table (lb)	Difference
1	69	46	141	165	−24	16	70	41	130	168	−38
2	70	36	151	165	−14	17	67	32	120	148	−28
3	67½	26	140	146	−6	18	67	31	137	148	−11
4	63	39	127	135	−8	19	65½	38	127½	142	−14½
5	65	24	131	137	−6	20	69½	30	142	158	−16
6	72	32	141	172	−31	21	63	25	113	131	−18
7	64	32	115	136	−21	22	67	34	150	148	+2
8	67½	36	116	150	−34	23	66	38	133	146	−13
9	63	31	112	133	−21	25	70	40	152½	168	−15½
0	68	37	140	155	−15	26	69	30	153	158	−5
1	64½	36	141	138	+3	27	69½	25	139	156	−17
2	63	49	142	140	+2	28	72	38	158½	176	−17½
3	67½	40	119	153	−34	29	71½	38	160	170	−10
4	70	37	136	165	−29	30	67½	39	127	148	−21
5	65	38	132	142	−10						

From 'Personal Health Standard and Scale' by Thos D Wood quoted by Mary S Rose 'Foundations of Nutrition' New York 1938

owed anxiety to an obvious degree in their tense, atchful expression furrowed or wrinkled brows, tremor the limbs or in air swallowing The three symptoms, llor undernutrition and anxiety were often found gether The principal findings in this group are mmarised in table II It shows that the majority had pical ulcer pain and that in about half the number, ere was radiological evidence of ulcer

LE II—FINDINGS IN PATIENTS SHOWING ANXIETY AND GASTRODUODENAL SYMPTOMS

se	Aerophagy	Typical pain	Remissions	Night pain	Complications	X ray findings
22	No	Yes	Yes	No	No	Duod ulcer
33	No	Yes	Yes	No	Perf 1930	Duod ulcer
37	No	Yes	Yes	Yes	Perf 1940	Normal
41	Yes	Yes	Yes	Yes	No	Normal
43	Yes	Yes	Yes	No	No	Normal
44	No	No	Yes	No	No	Duod spasm
50	No	Yes	Yes	No	No	Normal
52	No	Yes	Yes	No	No	Normal
61	No	No	No	No	No	Duodenitis
72	Yes	Yes	No	No	No	Duod ulcer
74	Yes	Yes	Yes	No	No	Aerophagy
81	No	Yes	Yes	No	No	Duod ulcer
84	Yes	Yes	Yes	Yes	Perf 1934	Duod ulcer
87	No	Yes	Yes	No	No	Prob gast ulcer
89	Yes	Yes	Yes	No	No	Aerophagy
92	—	Yes	Yes	Yes	No	Prob appendix
99	Yes	Yes	Yes	No	No	Aerophagy
4	No	Yes	Yes	Yes	No	Spasm and deform
13	No	No	Yes	Yes	No	Duod ulcer
17	Yes	Yes	Yes	No	Perf 1941	Duod ulcer
19	Yes	Yes	Yes	Yes	No	Normal
25	No	Yes	Yes	Yes	Melæna 1940	Gastric ulcer

Ærophagy was a prominent feature in 9 cases but it was seen also in 10 others who were not notably nervous Usually it was readily detected on clinical examination but in some cases it was first revealed by radiography It could not be said that its presence had much diagnostic value in favour of a purely emotional disturbance

One man (case 17) who was admitted twice to hospital during the period under consideration, showed aerophagy, anxiety and typical ulcer symptoms on the first occasion X-ray examination was negative The aerophagy was stopped and he was given a full diet The pain disappeared promptly, and he gained weight before returning to duty Within 3 months, however, he returned with the anxiety and aerophagy as bad as ever This time there was definite evidence of duodenal ulcer He was treated medically and invalided as unfit for further naval service He left hospital free of pain, but within a month of his return to civil life he perforated

This experience was repeated in another instance (case 37) and served to emphasise the fact that, even with negative X-ray findings and obvious anxiety symptoms typical pain should warn one of the imminence if not of the actual presence of ulcer, and of the possible complications connected with it. An anxiety state, however, seems to be a common finding in naval personnel suffering from gastroduodenal dyspepsia in war-time.

LABORATORY AND RADIOLOGICAL FINDINGS

Occult blood—Only 17 out of the 84 patients tested ‡ gave positive fæcal results for occult blood This low figure may partly be accounted for by the fact that the majority of the cases were received from another naval hospital where they had been some days or weeks in bed before transfer

Fractional gastric analysis was done in 84 patients In 54 cases, or about 64%, the curve of acidity was of the hyperchlorhydric type—either " climbing " or of the high sustained " plateau " type In 22 it was within normal limits in 4 there was subacidity, and in 4 more achlorhydria This last finding was surprising, especially as all the patients concerned gave a typical ulcer history. Only 1 of the patients with subnormal acid, however, was shown to have an ulcer by X rays—case 25 a gastric ulcer

CASE 25—Marine, aged 40 Recurring attacks of dyspepsia every 3–4 months lasting a week or so for 5 years At first there was only discomfort and flatulence, but in 1937 began to get definite pain 1–1½ hours after food, often waking him at night between 1 and 2 A.M Alkali powder invariably gave relief Between attacks of pain felt perfectly well and could eat anything During the attacks he took powder Called up for war service on Oct 6, 1939 Since then had suffered from almost continuous daily pain and lost weight The day before admission he passed tarry black stools Thin, pale, anxious appearance, Hb 85%, red cells 4,630,000 Fæces occult blood present Vitamin C deficiency Fractional test-meal achlorhydria with rapid emptying X ray gastric ulcer in upper part of pars media

Radiological examination was done in 89 of the 100 cases The other 11 had been X rayed before admission to hospital and the procedure was not repeated The apparatus used was a self-rectifying ward unit fitted to a single type couch necessitating an exposure of 2–2½ sec using 10 mA at 65–75 kV To change from screening to radiography everything but the mains had to be switched off and the apparatus readjusted These factors made it difficult to adopt fully the technique of Berg (as introduced into this country by Mather Cordiner) in an endeavour to demonstrate an actual ulcer crater, and so other signs had to be taken into account, as follows —

(1) Localised spasm leading usually to an incisura opposite the ulcer and sometimes associated with a general spasm of the cap

(2) Localised pain (not to be confused with discomfort in the abdominal wall caused by the prodding finger), pain is caused in the presence of an ulcer by pressure of the examining finger, probably because tension is increased in the œdematous tissue surrounding it

(3) Persistent localised deformity from cicatricial changes in the first part of the duodenum, to be distinguished from deformities caused either by adhesions or by the pressure of viscera or tumours

(4) Disturbances of gastric motility—i e, hyperperistalsis with spasm of the duodenal cap in the early stages of ulceration, or delayed emptying in the later stages

One of these signs appearing alone was not considered diagnostic of ulcer, but their combination was held to be strong presumptive evidence

In a few cases the diagnosis of duodenitis has been put forward, sometimes with an ulcer and sometimes without the criterion in these cases was spasm of the muscul
aris mucosæ with œdema of the mucosa itself (as evidenced by thick and rigid mucosal folds in the second and third parts of the duodenum) accompanied by failure to fragment the meal with consequent " pooling " of opaque material in the third part

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‡ Hb free diet and Gregersen s modification of the Benzidine test See Harrison G A Chemical Methods in Clinical Medicine London 2nd ed p 477

stomach after food The individual case-records were taken personally

SYMPTOMATOLOGY

A clear history of ulcer was given by almost all the patients, 93 had the typical remissions and 44 complained of night pain In half the total the tendency to indigestion had been present for five years or more, in a fifth of them it went back as far as ten to twenty years, and in only 7 patients was it under a year Thus 93% had had dyspepsia for more than a year, and this circumstance enabled us to contrast its outstanding features in the two periods, before and since the outbreak of war

Pre-war period —About one patient in three described a preliminary phase of atypical dyspepsia which had been noticed during adolescence, in the majority before entry to the service These were usually men with the longest histories, and the early symptoms were either recurring "hungry" feelings with heartburn or flatulence, severe bouts of abdominal colic, or frequent "bilious attacks" The appendix was often removed at this stage and some patients were benefited, but in others the operation had no effect Once the typical recurring attacks of pain after food had become established the patients could be graded, according to the severity of their pain and other features, into three principal types

In the *first group* were 47 patients whose tendency to dyspepsia was slight It was noticed for a few days or a week at a time and recurred only at long intervals—at the most two or three times a year It was never severe enough to cause them to go sick or to stop work Usually, when there was pain, they took an alkaline powder * and nearly all had relied on this to enable them to carry on It was more popular than dieting, probably because it entailed less trouble Only 9 men in this group dieted themselves during the attacks of pain

CASE 9 —Able-seaman, aged 31 First attack of indigestion occurred in 1934, while serving in the Mediterranean, after over indulgence in alcohol There was epigastric pain 2 hours after food, relieved by powder obtained from the sick bay Since then has had recurring attacks of pain lasting a few days, but has never been off duty until May 29, 1940, when admitted to hospital

The *second group* included 34 patients whose attacks of pain were more severe, more prolonged and more frequent They had had to seek medical attention and make some modification in their diet and habits In this group, 23 had been under treatment in naval and civilian hospitals at one time or another, and of these, 3 had had the appendix removed, 1 the gall-bladder, and another had had a gastro-enterostomy performed Neither medical nor surgical treatment had resulted in complete cure, however, and as a result all but one had been keeping to a diet, avoiding certain foods, and taking alkali regularly, even when there was no pain In this way they had managed to carry on, a few at sea in the Navy, others in the merchant service, the majority in civilian employment

CASE 29 —Seaman, aged 38 Gave 12 years' history of recurring pain 1½ hours after food In 1931 the attacks lasted 2–3 weeks and recurred 3–4 times a year Treated in civil hospital Laparotomy, no ulcer found, appendix removed Kept well for a year, then pain recurred as before, but by careful dieting and taking alkali regularly has managed to keep reasonably well, living at home in civil life Free from pain when entered service as a volunteer in January, 1940, but symptoms soon returned and were not relieved Admitted to hospital Oct 15, 1940

The *third group* included those who had had acute complications before the war at some period in the history of their dyspepsia There were 12 cases, 7 of perforation and 5 of hæmatemesis Perforation was the first symptom of indigestion in 3 cases Only 5 out of the 12 had been in the habit of dieting The remainder, like the patients in the first group, contented themselves with taking alkali only when pain was troublesome

CASE 66 —Stoker, aged 39 While serving in New Zealand in 1929 had a perforated duodenal ulcer, and gastro enterostomy was performed Since then had mild recurring attacks of pain every 3–4 months In 1935 a more severe attack was treated medically in an R N hospital Recently had pain at night and vomiting after meals Admitted Dec 6, 1939

Since the outbreak of war —Of the 93 patients who ha had indigestion in peace-time, all considered that had become worse since the outbreak of war Sinc September, 1939, 16 had had complications—6 perforation, 5 melæna, 3 hæmatemesis, 1 pyloric stenosis, 1 gastr colic-jejunal fistula In 68 patients the pain was mo severe and attacks had recurred more frequently I the remaining 25, pain was said to be constantly prese and no longer relieved by alkaline powder Two oth symptoms were very prevalent and contributed great to cause disability—loss of weight and vomiting Ha *of the 93 patients had lost more than 7 lb* in weight an some as much as 2 stone About the same number (43 complained of frequent vomiting, which occurred aft meals, especially when pain was severe and a full me had been eaten Only 4 complained of the vomiting large amounts of stomach contents About a quart of the 93 had been sent sick ashore and admitted hospital on a previous occasion, some on two or eve three occasions, each time the pain had yielded te porarily to rest and diet but had recurred shortly aft taking up duty again

CASE 3 —Able seaman, aged 26 At the age of 18 noticed spasms of severe "gripping" pain across the abdome The pain recurred every three months or so and was usual associated with constipation, there was no relation to foo Entered R N at 18 Appendicectomy at 20, and free symptoms for 3 years Then, at 23, had epigastric pa ½ hour after food which was relieved by alkali and dieti Treated in R N hospital and recovered within 5 wee Returned to full diet and duty and kept free of sympto until September, 1939, when pain recurred It was the sa as before except that food did not relieve it Remained duty, at sea in a destroyer, and took alkali regularly (Nov 24, 1939, *perforation of ulcer on anterior wall of fi* part of duodenum, simple suture Returned to barrac but within 4 weeks the pain recurred and has been prese daily since then Unrelieved by food or alkali Lost ¾ sto in past 3 months Admitted March 7, 1940

Other symptoms and complaints —Inquiry was ma for other symptoms or diseases noticed since the onset dyspepsia Headache was complained of in 14 case insomnia in 3, fainting attacks like petit mal in recurring attacks of urticaria in 1, asthma in 1, ren calculus in 2 While the occasional coincidence of o or other of these with dyspepsia is probably of importance, the frequency of headache is notewort Of the 14 men who mentioned it, in 4 the description w too vague to enable any conclusion to be drawn the remaining 10 it resembled migraine in characte periodicity and the associated visual disturbances

CONDITION ON EXAMINATION

With 2 exceptions, † those patients who had been t victims of acute gastro-intestinal complications were co valescent on admission to hospital In these, as in other uncomplicated cases, examination of the hea lungs, nervous system and urine was negative The was no instance of gastric cancer or of signs pointing disease of the gall-bladder or liver

The *abdomen* was often tense, and the seat of diffu or localised tenderness, especially in the epigastrium, b many patients who were afterwards shown to have ulc had flaccid, non-tender abdominal muscles It was n uncommon to find the pelvic colon loaded and contract so that it formed a hardened mass in the left iliac foss Such patients usually had fæcal masses in the rectum

Pallor, undernutrition and anxiety —Many patients ha a pallid complexion and were undernourished Th types predominated and it was exceptional to meet wi corpulent or obese subjects (table I) The pallor w not due to anæmia The mucous membranes and co junctivæ were a healthy colour and routine bloo n the formula of desoxycorticosterone explains why this ormone, unlike other cortical hormones, could be btained by synthesis

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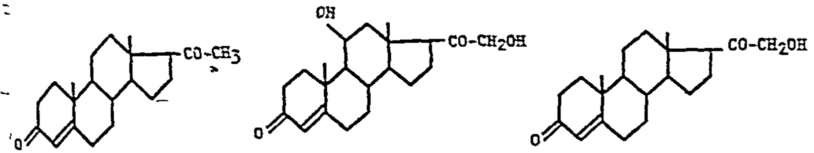
* Maclean's brand stomach powder was the favourite

† One had a perforated duodenal ulcer and the other a gastr jejuno colic fistula The latter (case 68) a petty officer aged 3 had a severe hæmatemesis 5 years ago, after recurring attacks epigastric pain A duodenal ulcer was diagnosed and a gastr enterostomy was done He kept well until 1938 when the pa recurred Since then has had attacks of increasing severity a frequency Admitted on Jan 1 1940 For 6 months previou there had been steady loss of weight and bouts of vomiting eve 3–4 days the material being copious, excessively foul and fæcal odour A gastro jejuno colic fistula was diagnosed and its presen confirmed at operation The fistula had arisen from a jejun ulcer consequent on the gastro enterostomy



Progesterone Corticosterone Desoxycorticosterone

FIG 1

EXPERIMENTS WITH DESOXYCORTICOSTERONE

We thought it worth while to see whether synthetic desoxycorticosterone would prevent experimental fibroids, as progesterone and testosterone do The acetic ester of synthetic desoxycorticosterone (called elsewhere in this paper ' doca ") as prepared by Dr K Miescher, was used Table I summarises the results obtained in 17 castrated female guineapigs in which tablets of œstradiol and tablets of doca were implanted simultaneously under the skin (œstradiol on the left side and doca on the right side) The results were compared with those in a control series of 20 animals which received tablets of œstradiol only The behaviour of the genital tract in the two groups differed The vagina opened three days after implantation of the tablet in the œstradiol group The vagina opened also in the œstradiol-doca group but—with 2 exceptions—became closed again after about two weeks or more, and remained closed throughout the rest of the period of observation Genital bleeding appeared in 6 out of 20 animals of the œstradiol group about a month after the beginning of treatment, it was never observed in the œstradiol-doca group even when the vagina remained open for a long time In more than half of the animals of the œstradiol group ulceration of the labia became conspicuous at the beginning of the third week after implantation of the tablet in no animal of the œstradiol-doca group was ulceration seen

Autopsy was carried out 54–63 days after implantation of tablets In the œstradiol group uterine and extragenital fibroids were well developed and the average total tumoral mark (Lipschütz and Vargas 1939a and 1939b) was 3, the average was attained or surpassed in 10 out of 20 animals in this group But in the œstradiol-doca group no animal showed a reaction of more than 1 5 and the average was 0 5 Fig 2 shows the maximal fibrous reaction in the œstradiol-doca group and fig 3 the maximal reaction in the œstradiol group Uterine tumours, sometimes of considerable size (fig 4), were present in 15 out of 20 animals of the œstradiol group and there were no animals with uterine tumours in the œstradiol-doca group The extragenital reaction of the œstradiol-doca group produced nothing more than a tumoral seed on the spleen and rarely extended outside it except for some fibrous strands in the abdominal cavity; we find this kind of reaction to be characteristic of a low tumoral sensitivity

There was also a remarkable difference in the uterine weights as shown in table I The enormous development of the uterus as seen in the œstradiol group was—with one or two exceptions—inhibited in the other group by the presence of the doca tablet There was purulent peritonitis with uterine localisation, due to the prolonged treatment with the œstrogen, in 3 out of the 20 animals of the œstradiol group, no animals of the œstradiol-doca group were affected in this way

The influence of the cortical hormone on the development of the mammary glands and nipples was not inhibited as far as could be judged by the naked eye Doca produced no masculinising effect on the clitoris

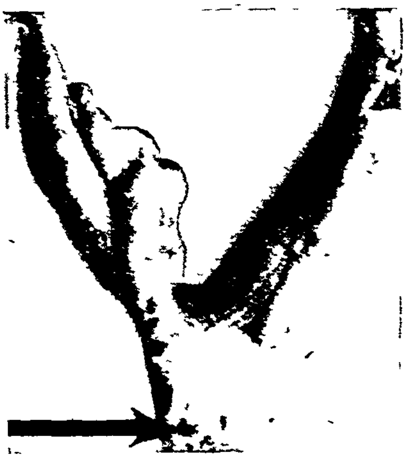


FIG 4—Dorsal view of the uterus shown in fig 3

DISCUSSION

These experiments show that the cortical hormone is capable of preventing completely the production of uterine fibroids and of reducing the extragenital tumoral reaction to a minimum, it is also likely to prevent uterine bleeding and other toxic effects of prolonged treatment with œstrogens

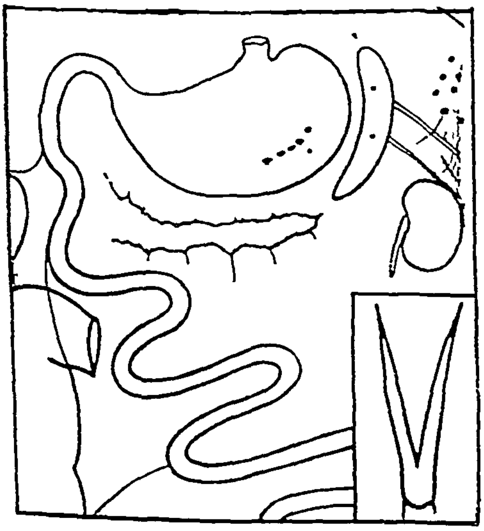


FIG 2—Tumoral reaction induced by a subcutaneous tablet of œstradiol in the œstradiol-doca group Maximal reaction in this series (total tumoral mark, 1 5) Small flat excrescences (tumoral seeds) on the spleen stomach and abdominal wall on the left fibrous strands here and there Quantity absorbed œstradiol 2 7 mg desoxycorticosterone 8 mg

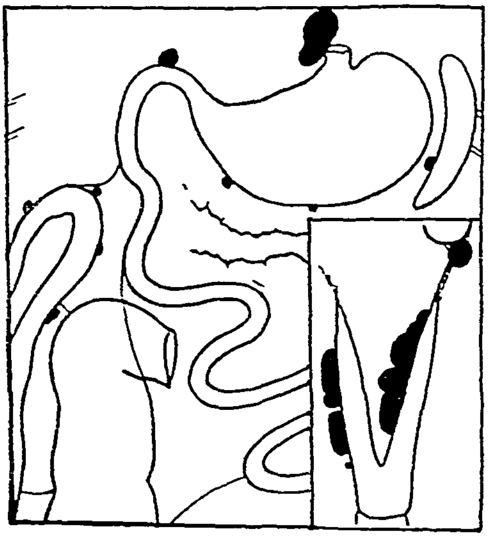


FIG 3—Tumoral reaction induced by a subcutaneous tablet of œstradiol in the œstradiol group Maximal reaction in this series (total tumoral mark 9) Enormous parametrial tumours an apical uterine tumour near the lower pole of the kidney numerous tumours in the gastro intestinal tract tumour in the hilum of the spleen Quantity of œstradiol absorbed 3 mg

The radiological diagnoses made in the 89 cases examined were as follows —

	No of cases		No of cases
Gastric ulcer	6	Duodenitis *	1
Prob gastric ulcer	1	Chronic appendicitis	3
		Old gastro enterostomy	2
Duodenal ulcer	34	Gastro jejuno colic fistula	1
Prob duodenal ulcer	6	Aerophagy	7
Spasm of duodenal cap	9	No abnormality seen	19

* Duodenitis was also seen in 6 cases associated with duodenal ulceration

Gastric or duodenal ulcers, whether certain or probable, were found, therefore, in 47 out of the 89 cases Spasm of the duodenal cap or duodenitis was seen in 10, and altogether 63 cases, or 71% of the total, showed some pathological finding

SUMMARY AND CONCLUSIONS

A review has been made of 100 sailors and marines who had symptoms of peptic ulcer In almost all the symptoms were of long duration In only 7% had they begun since the outbreak of war In half the number they had been present, on and off, for five years or more, and in a fifth for ten to twenty years

The dyspepsia was typical of peptic ulcer The clinical picture differed, however, from that experienced in peace-time in the following respects —

(*a*) The pain was usually more severe and it recurred at shorter intervals It was often continuous and unrelieved by food or alkali

(*b*) Attempts to carry on and eat ordinary food led to frequent vomiting and great loss of weight The most frequent accompaniments of undernutrition and continuous dyspepsia were pallor and anxiety

(*c*) Acute gastro intestinal complications were more common In the whole period before the war, 12 of these patients had had complications 7 perforation and 5 hæmatemesis Between September, 1939, and January, 1940, 16 patients had complications 6 perforation, 5 melæna, 3 hæmatemesis, 1 pyloric stenosis and 1 gastro jejuno colic fistula

Radiological examination demonstrated a gastric or duodenal ulcer in about 45% of the cases, and a probable ulcer in a further 8% This figure is undoubtedly an underestimate of the true frequency of ulcer in the series, attributable to the technical difficulties of a small X-ray set

The disposal of service patients with symptoms of peptic ulcer is a difficult problem, and in most instances can be decided only after consideration of all the individual features of the case If the presence of an ulcer is taken as the deciding factor about half of the cases will be invalided But too much emphasis may have been laid on the importance of demonstrating an ulcer by X rays If the history is not considered carefully a patient may wrongly be returned to duty because the X-ray findings are inconclusive and because his symptoms have been temporarily relieved by medical treatment Many such cases recur and are ultimately invalided History is a much more reliable guide to prognosis, and when pain is characteristic and has recurred over a long period there are strong grounds for invaliding Obvious undernutrition in such patients is often useful confirmatory evidence where the X-ray findings are inconclusive Hæmatemesis, severe melæna or perforation is also adequate justification for invaliding, even though the patient may recover fully and the ulcer be no longer demonstrable

The majority of dyspeptics seen in hospital in the first year of the war were clearly chronic cases—men who had contrived to keep going in peace-time but had broken down in war But the problem is changing and will change more as these men are gradually removed from the service and their place is taken by younger men who are likely to show more recent and less defined symptoms

When cases of dyspepsia have done well under treatment, it has been the practice to return them to duty with a recommendation for a period of shore service, or service only in a ship carrying a medical officer It remains to be seen whether their stay in hospital will enable them to carry on under active-service conditions in war-time Some form of supervision is clearly necessary to ensure that they are followed up, and to consider the ætiological factors involved in bringing about possible future recurrences of their dyspepsia

Acknowledgments are due to Surgeon Rear Admiral F J Gowans for his permission to publish the records of the cases, which were under his care

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PREVENTION OF EXPERIMENTAL FIBROIDS BY A CORTICAL HORMONE

BY

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EXPERIMENTAL uterine and extragenital abdomina fibroids produced by a prolonged administration o œstrogens can be prevented when testosterone propionate or progesterone is injected simultaneousl with the œstrogen (Lipschutz, Vargas and Ruz 193 Lipschutz, Murillo and Vargas 1939, Murillo 1940 Our first experiments were not numerous but were late extended on a larger scale, 31 animals receiving œstradiol and 52 receiving simultaneously œstradiol and testosterone, or œstradiol and progesterone (Lipschutz an Vargas 1941) Uterine fibroids were completely prevented by quantities of testosterone propionate fift times greater than those of the esterified œstradio simultaneously injected, or by quantities of progesteron a hundred and fifty times greater than those of th *tumorigenic œstrogen* *Uterine fibroids as* produced b subcutaneous implantation of tablets of œstradiol wer also completely prevented when tablets of progesteron were implanted simultaneously

In these experiments with tablets, the average proportion between absorbed œstradiol and progesteron sufficient to prevent fibroids dropped as low as 1 1 (Lipschutz and Vargas 1941) The implantation o tablets under the skin by the technique of Deanesly an Parkes (1937, 1938 , see also Warwick and Parkes 1940 proved in our experiments to be the most economica way of preventing the experimental production o fibroids by œstrogens

Testosterone and progesterone are not entirely harmless to the human body, when given for a long time, th first on account of its masculinising action and the secon on account of its action on the uterine mucosa W thought that cortical hormones because of their chemic similarity to progesterone might also prevent exper mental fibroids Experimental findings indicate tha the adrenals may exert an inhibiting action on the effect of œstrogens Del Castillo and Calatroni (1930) reporte that when œstrus is provoked in the castrated rat b continuous treatment with small doses of œstrogen anœstrous periods appear again from time to tim Similar observations were also made by Zuckerman o the rhesus monkey (1937a) and on the rat (1938), h suggested that there is some relation between these cyclic changes and the adrenal cortex (Zuckerman 1937b) I Paola (1939) showed that these anœstrous periods can b reduced in length when the adrenals are removed On may therefore tentatively suggest that the adrenals produce a hormone or hormones which exert an inhibitin action on the effects of œstrogens Progesterone, which i known to have such an inhibiting action (Courrier an Cohen-Solal 1937) is produced in the adrenals (Beall an Reichstein 1938, Beall 1940), but the anti œstrogeni action of the adrenals may be due to some specifi cortical hormones as well Of the five active cortica hormones, desoxycorticosterone bears the greates likeness to progesterone, as the brilliant work of Reichstein (1938) and others has shown (fig 1, see Reichstei 1939) The absence of a hydroxyl group in position 1

COMPOSITION OF DIPHTHERIA ANTITOXIC SERA

BY

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IT is the purpose of this note to draw attention to some new facts concerning the composition of diphtheria antitoxic sera, which may have a bearing on their therapeutic efficiency

It has been usual in the concentration of diphtheria antitoxic serum by salting-out methods to separate first a less soluble fraction (the euglobulin fraction) of low antitoxic activity, and then to precipitate a second fraction—pseudoglobulin—by further addition of the precipitating salt This pseudoglobulin fraction of the serum proteins contains the bulk of the antitoxin units It is now known that the total globulin fraction of the serum consists of three components, α, β and γ globulins, of similar molecular weight but different electrophoretic mobilities Both the pseudoglobulin and euglobulin fractions of the ordinary salting-out procedure are mixtures, the former being predominantly composed of α and β globulins, while the euglobulin contains a relatively large proportion of γ globulin and some β globulin Pappenheimer and others [1] have separated from the pseudoglobulin fraction of diphtheria antitoxic horse serum a physically homogeneous globulin, of which nearly 50% was specifically precipitated by diphtheria toxin

A detailed examination of the three globulin components isolated by the electrophoretic method from diphtheria antitoxic horse serum has been made by two of us [2] It has been found that, while the α component has no detectable antitoxic activity, both the β and the γ components are antitoxic, the sum of the separate activities accounting satisfactorily for the total activity of the serum Both these proteins are specific antibodies to the classical diphtheria toxin prepared by the use of a Park-Williams 8 strain, in that they neutralise this toxin in the usual animal test for potency (L+) and flocculate with the toxin in a balanced mixture (Lf) There are, however, striking differences between the two antitoxins—in the flocculation time, the in-vivo/in-vitro ratio (L+/Lf), and the empirical composition of the floccules, as follows

	$Kf_{7\ 5}$ minutes	In vivo/in vitro ratio $\left(\frac{L+}{Lf}\right)$	Floccule composition
β globulin	147	0 9	$(TA_2)n$
γ globulin	7	2 0	$(TA_4)n$

$Kf_{7\ 5}$ = Flocculation time at 7 5 Lf/ml level
T = One molecule of toxin
A = One molecule of antitoxin

Examination of the relative and absolute amounts of β and γ antitoxins in a number of horse sera during the routine course of immunisation with diphtheria toxoid showed that initially the amount of γ antitoxin increased more rapidly than the β antitoxin but soon reached a steady value The β antitoxin, however, rose more slowly to a much higher maximum value and thus contributed the major proportion of the total unitage finally obtained In a series of bleedings from a single horse the in-vivo/in-vitro ratio decreased, and the flocculation time, which afforded a useful indication of the relative amounts of β and γ antitoxin, increased pari passu with the proportion of β antitoxin

The γ antitoxin precipitates at lower salt concentrations than the β antitoxin, and in serum concentration by salting-out methods tends to be separated in the euglobulin fraction, which is removed, while the bulk of the total antitoxin units is obtained in the pseudoglobulin fraction, the antitoxic activity of which is predominantly due to β antitoxin It has been noted by Glenny and his co workers [3] that "avid" sera commonly give rapid flocculation, and that in fractional precipitation with increasing amounts of ammonium sulphate the earlier fractions have a higher in-vivo/in-vitro ratio, and are more "avid" than the later fractions The avidity was gauged by the dissociation of the toxin-antitoxin complex on dilution It seems probable that these observations may be correlated with the relative proportion of γ antitoxin in different sera and in the various fractions precipitated with ammonium sulphate

In the recently introduced process of serum concentration by the use of pepsin,[4] the product, containing on an average 80% or less of the total antitoxic activity of the serum, has a rather short flocculation time, approaching that of the γ antitoxin, but the in-vivo/in-vitro ratio of this antitoxin is approximately unity, and the protein is most probably derived from β globulin The rapid flocculation per se of an antitoxin therefore is not necessarily an indication of γ antitoxin, though, as remarked above, in unconcentrated sera the flocculation time is a useful indication of the proportion of γ antitoxin

In investigations of the pepsin-concentration process we have obtained poor yields of antitoxin from fast flocculating sera, and from a fraction containing a high proportion of γ globulin only 15–20% of the antitoxic activity was recovered Early bleedings, late bleedings, salt-concentrated antitoxin (pseudoglobulin) and pepsin-treated antitoxin show in this order a progressive decrease in the proportion of the total unitage contributed by γ antitoxin

These facts may possibly have some bearing on the recent clinical observations of McSweeney,[5] who has reported successful results in the treatment of a small number of cases of hypertoxic diphtheria with a particular antitoxic serum, the characteristics of which have been described by Trevan [6]

This batch of antitoxin differed from the ordinary commercial antitoxin in the following respects

1 It was "avid" as determined by the dilution ratio test (Glenny and Barr [3])

2 It contained an excess of the non flocculating antitoxin of Barr and Glenny [3] as measured by the serum ratio—i e, it had a high in vivo/in-vitro ratio

3 The serum ratio had been increased by a special method of salting out which had been shown by Barr and Glenny [3] to increase the proportion of non flocculating antitoxin (see above)

It seems reasonable to infer that the serum McSweeney first used was relatively rich in γ antitoxin, and that the second batch, which consisted of a later bleeding from the same horse, was relatively poor in this component, so that for a given total number of antitoxin units injected fewer γ antitoxin units were administered in the serum from the later bleeding than in the serum from the early bleeding

Owing to the small quantities of material available it has not yet been possible for us to examine the avidity of purified γ antitoxin as measured by the dissociation of toxin-antitoxin complex on dilution (Glenny) and by the rate of combination in animal tests (Madsen) Meanwhile there is an indication that this antitoxic fraction may be avid, as defined above, because it has the short flocculation time and the high in-vivo/in-vitro ratio usually characteristic of avid sera In view of McSweeney's assumption that the avid serum he used with success contained an abundance of the anti-B factor which O'Meara [7] considers to be essential in the treatment of hypertoxic diphtheria, it should be emphasised that both the β and γ antitoxin described by Kekwick and Record [2] neutralises the classical diphtheria toxin produced by a typical Park-Williams 8 strain, and that the diphtheria antitoxic sera investigated were prepared by the use of a similar Park-Williams 8 toxoid as antigen Further experiments to test some of the points raised are in progress

It is clear that in considering the specific treatment of diphtheria the existence of the β and γ antitoxins should be borne in mind, quite apart from any other special properties of the serum which may contribute to its curative action in hypertoxic patients The relative clinical value of the β and the γ antitoxin will doubtless be determined in future investigations

SUMMARY

An examination of diphtheria antitoxic horse sera by the technique of electrophoretic analysis has shown that of the three separable globulin components, two, the β and γ fractions, have antitoxic activity

Both these proteins are specific antibodies to the classical diphtheria toxin prepared by the use of a Park-

TABLE I—RESULTS OF SUBCUTANEOUS IMPLANTATION OF TABLETS OF (1) ŒSTRADIOL AND (2) ŒSTRADIOL PLUS DOCA IN CASTRATED FEMALE GUINEAPIGS

Group	No of guinea pigs	Durn of expt (days)	Av œstradiol absorbed (mg)	Av doca† absorbed (mg)	Animals with tumoral uterine reactions	Animals with individual uterine or extrauterine tumoral marks not less than 1	Total tumoral mark (fibroids and fibrosis)		Weight of uterus	
							Av	Min and Max	Av	M a M
I Œstradiol	20	54–62	3 (2 2–4 1)	0	15	14	3 ± 0 54	0 5–9	3 44‡ ± 0 34§	° 1
II Œstradiol and doca	17	55–63	2 5 (1 1*–4)	7 72 (6 9–9 9)	0	1	0 5 ± 0 11	0–1 5	1 94 ± 0 16	1-

* One animal absorbed 0 6 mg only

† Calculated for desoxycorticosterone, not for the acetic ester (1 mg of desoxycorticosterone when esterified with acetic acid v 1 13 mg) One animal absorbed 3 4 mg only ‡ Only 13 animals, the remaining 7 mostly had very large uteri and tun

§ $\Sigma = \sqrt{\frac{\Sigma d^2}{n(n-1)}}$, according to Burn (1937)

One objection to these conclusions may be raised absorption of œstradiol was somewhat greater in the œstradiol group (3 mg) as against 2 5 mg in the œstradiol-doca group Absorption, too, was more uniform in the œstradiol group, varying between 2 2 and 4 1 mg, whereas in the œstradiol-doca group the quantity absorbed varied between 1 1 and 4 mg, the difference is not significant and does not indicate that absorption of œstradiol was diminished by the action of the cortical hormone Nor can it be objected that our conclusions are based on a casual lesser absorption of the tumorigenic œstrogen in the œstradiol-doca group, because only those experiments are compared in which absorption of œstradiol was equal and uniform in both groups (table II) The comparison clearly shows the preventive action of the cortical hormone

Our results also show the low relation between the quantity of absorbed œstradiol and the quantity of absorbed cortical hormone When all experiments are considered (table I) the relation is 1 3 1 (as calculated for desoxycorticosterone and not for the acetic ester)

TABLE II—UTERINE WEIGHTS AND TUMORAL MARK FOUND AT AUTOPSY IN THE TWO GROUPS OF GUINEAPIGS

Œstradiol group					Œstradiol doca group					
Guineapigs	Duration (days)	Œstradiol absorbed (mg)	Uterine weight (g)	Tumoral mark	Guineapigs	Duration (days)	Œstradiol absorbed (mg)	Desoxycorticosterone absorbed (mg)‡	Uterine weight (g)	Tumoral mark
1	54	3 9	3 3	2 5	1	55	4	6 9	1 1	1
2	54	4	7 2*	7 5	2	57	3 5	7 7	1	0 5
3	55	3 4	†	4 5	3	57	3 5	7 5	2 1	0 5
4	55	3 3	2 4	1	4	57	3 7	9 9	2	0 5
5	55	3 2	3 3	0 5	5	62	4	9 2	3	0
6	55	3 2	5 8*	3 5	6	63	3 3	8 2	2 3	0 5
7	60	3 5	5 7	5						
8	60	4 1	3 1	2						
9	62	3 6	3 3	1						
10	62	3	†	9						
Average		3 5	3 5	3 6			3 6	8 2	1 9	0 5

* With tumours (omitted in the average)

† Not weighed on account of large tumours

‡ Calculated for desoxycorticosterone, not for the acetate

When only those experiments are considered in which there was a good absorption of œstradiol (table II) the relation between the quantities of absorbed œstradiol and desoxycorticosterone is 1 2 3 A quantity of desoxycorticosterone about three times that of œstradiol is sufficient to prevent the tumorigenic and some other toxic actions of the latter The synthetic cortical hormone used is probably superior, in this respect, to the synthetic progesterone and testosterone propionate used in our former experiments, though no quantitative details can be given at present We have also tried tablets of different esters of testosterone and other synthetic androgens, such as dihydrotestosterone and androstandiol prepared by Dr K Miescher, the results will be given in a later paper

We have not yet examined the uterine mucosa m scopically, but it seems probable that here also we find evidence of a preventive and protective action c cortical hormone, confirming the work of Korenche (*Korenchewsky and Hall 1937) on the effect* progesterone in the rat, and our own former (Lipschutz, Vargas and Ruz 1939) on testostero the guineapig

SUMMARY

Tablets of the acetic ester of desoxycorticostero synthetic cortical hormone, when introduced unde skin simultaneously with a tumorigenic tablet of o diol, are able to prevent the tumorigenic and some toxic effects of the prolonged absorption of the œstr

Uterine fibroids were completely prevented, genital fibroids were reduced to a minimum

Extreme development of the uterus and u bleeding, which may be expected after prolonged al tion of œstradiol, were also inhibited by the prese desoxycorticosterone

The amount of desoxycorticosterone necessa inhibit the tumorigenic action of œstradiol is only three times the amount of the latter when subcuta tablets are used In its tumour-preventing desoxycorticosterone seems to be superior to sterone and progesterone, though no quanti comparison can be made as yet

This investigation has been aided by grants from th *Coffin Childs memorial fund for medical research* o University, from the Ella Sachs Plotz foundation f advancement of scientific investigation, from Mr Eastman (Limache, Chile), and by special government for research work, by courtesy of the Chilean Mini Health

Thanks are due to Dr K Miescher of Messrs Ciba i for supplying œstradiol and synthetic desoxycorticos and to Dr C Nuñez and Mrs Violeta de Kaplan for te help Mr Reynaldo Vargas kindly checked all sta *calculations*

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Williams 8 strain, in that they neutralise this toxin in the usual animal test for potency (L+) and flocculate with the toxin in a balanced mixture (Lf)

There are striking differences between the two antitoxins as shown by the flocculation times, the in-vivo/in-vitro (L+/Lf) ratios, and the empirical composition of the floccules

The relative and absolute amounts of the β and γ antitoxins altered during the course of immunisation in horses Initially the amount of γ antitoxin increased more rapidly than the β antitoxin but soon reached a steady value The β antitoxin of the serum increased more slowly to a much higher maximum value and contributed the major portion of the total unitage obtained at the end of the course of immunisation

It is suggested that there may be a correlation between the avidity of a serum (as gauged by the Glenny dilution-ratio technique) and the relative proportion of γ antitoxin present

The γ globulin (containing the γ antitoxin) is precipitated at lower salt concentrations than the β globulin and thus tends to be precipitated in the "euglobulin" fraction in the classical salting-out method of serum concentration Furthermore the γ antitoxin appears in large measure to be lost in the "pepsin process" of serum concentration, the product there being probably a modified β globulin

Early bleedings during a course of immunisation, late bleedings, salt-concentrated antitoxin (pseudoglobulin) and pepsin-treated antitoxin show in this order a progressive decrease in the proportion of the total unitage which is contributed by the γ antitoxin

It is possible that the relative and absolute amounts of the two antibodies in any given sample of serum may have a bearing on its therapeutic efficiency

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Reviews of Books

Hemorrhagic Diseases

Photo electric study of blood coagulability By Kaare K Nygaard, M D, former fellow in surgery at the Mayo Foundation and former assistant surgeon at the University *Clinic, Oslo* London Henry Kimpton Pp *320* *28s*

For a proper idea of the contents of this book the titles should be reversed It begins with a critical survey of methods for determining the coagulability of blood and goes on to a description of Dr Nygaard's own method In principle this depends on recording the amount of light transmitted through clotting blood-plasma to a photo-electric cell, the continuous photographic record of the diminution of the transmitted light is called the "coagelgram" By this means the kinetics and phases of blood coagulation are studied and their application to the theory of the details of this process is discussed Control observations were made by watching the coagulation of blood by dark-ground microscopy and other methods and some interesting observations on the rôle of the platelets are presented From the point of view of the clinical pathologist several useful points are brought out indicating the conditions that must be complied with if comparable results for "clotting times" are to be obtained Nygaard uses citrated blood-plasma and clotting is started by recalcifying The blood must be withdrawn into an oiled syringe and the volume of citrate added must be adjusted according to the hæmatocrit reading, so that a constant final citrate concentration is obtained, a chart is given for doing this The blood is allowed to sediment—it must not be centrifuged for this removes a variable number of platelets—and then plasma and calcium-chloride solution are warmed to 37° C before mixing Similar precautions are described for determining the "prothrombin time", Nygaard thinks that Quick's method is useful for detecting gross prothrombin deficiency, but is only a very rough quantitative measure of the prothrombin content of plasma The application of these methods to some hæmorrhagic diseases is then given He thinks that the platelets play an important part in initiating clotting, and, on account of their exceptional adhesive and agglutinating properties, in producing hæmostasis after injury of small vessels like capillaries Hæmophilia is shown to be due to a quantitative deficiency of thromboplastin and Nygaard holds that a qualitative defect in the platelets is an important contributory factor In thrombocytopenic purpura a definite hypocoagulability of the blood was found and connected with the diminution of the platelet count in the blood

This work has not enabled Nygaard to suggest a satisfactory classification of the hæmorrhagic diseases and the list he gives is quite orthodox The valuable portions of this book are the precise directions for obtaining comparable coagulation and prothrombin times and should influence even those who only need methods more simple than a photo-electric one

Psychiatric Clinics for Children

By Helen Leland Witmer, Ph D, research associate, National Committee for Mental Hygiene New York The Commonwealth Fund, London Humphrey Milford, Oxford University Press Pp 437 14*s*

Before the war this book would have been invaluable to the many of our students who found their way across the Atlantic as postgraduate fellows or otherwise Now it is sometimes difficult to remember that there were times when an interchange of personnel was so free and so happily frequent But because it is no longer possible to study at first hand in the United States the growth of the child-guidance movement, Dr Witmer's book is all the more welcome on its appearance in this country She has written a remarkably interesting and penetrating study It escapes both the tedium of a merely descriptive list of clinics and the falseness of over-enthusiastic praise for what is, after all, still only experimental work, and therefore changing and adapting to varied conditions in the field Dr Witmer has for many years been a teacher of psychiatric social work, this may account for her objective approach and dispassionate account of a type of service for which she recognises a growing demand Starting with a historical background of the movement, paying due tribute to the work of Adolf Meyer, then associated with G Stanley Hall and William James, she considers the existing services provided by different States and the lines along which development is taking place Passing from the early days to the boom years of dramatically expensive "demonstration" clinics, she outlines some of the present day State programmes It is encouraging to note the increasing acceptance of responsibility by the State for the mental welfare of its children, whether the community is an urban one or whether the service has to be adapted to the varied conditions in rural areas of America Into this book can be read much of the historical and sociological development of a great democracy And it creates again a vivid picture of clinics and personnel which must be held warmly in the memories of many workers in our own country who trained there Perhaps most important of all, it serves to remind us of the demands made by the young people who develop maladjustments early in their lives, and their need for early and comprehensive treatment Not even a state at war can afford to overlook that

The Treatment of Diabetes Mellitus

(7th ed) By Elliott P Joslin, Howard F Root, Priscilla White and Alexander Marble London Henry Kimpton Pp 783 35*s*

A new edition of this well-known book is an event for all who are interested in diabetes This edition, like its predecessors, ably discusses almost all the work on diabetes which has appeared up to the time of publication The main appeal of the book is to the specialist, but its bias is not theoretical, on the contrary, it is essentially clinical Experimental findings are regarded from the standpoint of practical medicine, and the purely clinical chapters are full of wisdom and experience

THE LANCET

LONDON SATURDAY, MAY 3, 1941

FUNCTIONAL DISORGANISATION OF THE KIDNEY

PHYSIOLOGISTS studying the kidney have in the past busied themselves largely with the frog Technical obstacles made anything except histological work on mammals very difficult and few seriously considered the use of human subjects The pathologists began their lectures on the kidney with acute nephritis and finished appropriately with that last stage of all—the small white organ Between the two schools there was a great gulf fixed and for a long time there seemed no prospect of bridging it Now this is changed, high blood-pressures have been experimentally produced by interfering with the renal blood-flow and are being studied from various angles[1] Clinical investigators have challenged the physiologists by discovering a number of diseases in which the function of the kidney may be temporarily disorganised, and the physiologists have produced several elegant quantitative methods and a wealth of new information about the normal function of the kidney which has been of great service to the chemical pathologists Thanks to the work of HOMER SMITH and his associates[2] it is now possible to measure the rate of glomerular filtration in the intact animal or indeed in man, and at the same time to get an estimate of the approximate blood-flow through the kidney

The first of these procedures has been applied to the study of alkalosis,[3] of hæmatemesis,[4] and of diabetic coma,[5] all of which may be accompanied by a rise of blood-urea and functional renal disorganisation In all, a fall of glomerular filtration-rate has been clearly demonstrated and goes far by itself to explain the rise of blood-urea The cause of the fall in glomerular filtration-rate is not so easy to explain, a fall in blood-volume has been suggested as the cause, and also a fall in arterial pressure Neither of these is wholly satisfactory, for in uncompensated alkalosis there is neither hæmoconcentration nor a pathological fall in blood-pressure In experimental salt-deficiency we are up against the same difficulty, this state is accompanied by functional renal impairment, characterised by a rise in the blood-urea, and a fall in the glomerular filtration-rate In the rabbit it is possible to demonstrate these changes when there is no fall in blood-volume and no important fall in general arterial blood-pressure[6] BLACK and his colleagues[4] have now found that the fall in glomerular filtration-rate after hæmatemesis is closely related to a fall in the effective blood-flow through the kidney This is a distinct advance in knowledge and it is to be hoped that similar studies will soon be made during salt deficiency and in uncompensated alkalosis It is a great pity that the detailed and excellent studies of BICK and WOOD[7] did not embrace these measurements

The excretion of glucose in health and disease is another aspect of kidney function where physiologists and pathologists have recently pooled their resources It has been known for a long time[8] that in diabetic coma the excretion of glucose may cease although the blood-sugar is far above the threshold levels SHANNON and FISHER[9] demonstrated that the fixity of the glucose threshold was normally due to a steady glomerular filtration-rate and a capacity of the tubules to reabsorb up to but not more than so many grammes of glucose per minute The abnormal findings in diabetic coma were then shown[5] to be due in all probability to a reduction in the glomerular filtration-rate while the tubule cells remained relatively normal The " failure " of the kidney in some pathological states to excrete chlorides in the normal way[10 5] may turn out to be due to the same mechanism, and interest is enhanced by MCCANCE and YOUNG'S[11] discovery that normal infants may exhibit this reluctance to excrete chloride even when the levels of plasma-chloride are very high In alkalosis and diabetic coma and after hæmatemesis the appearances of the kidneys are relatively normal post mortem, and the histological changes are never enough to justify the renal parenchyma being incriminated as primarily responsible for the disordered function. The same is true of the so-called reflex anurias which are still so heartbreaking to urologists and intellectually baffling to physiologists But in this respect the failures of renal function after crush injuries differ, for in them widespread histological changes are at once discovered in the kidney and constitute a characteristic part of the syndrome Although the cases of renal failure and injury lately described by BYWATERS and others[12] are undoubtedly connected with crushing injuries the exact connexion is still obscure, as are many aspects of the functional changes All the patients seem to have had transfusions of plasma and nearly all of blood, the renal appearances and pigmentations recall those of incompatible transfusions. It is really too soon to place this pathological entity, much more work will have to be done on it The clarification of other functional abnormalities of the kidney induced by disease has been delayed by the difficulty in reproducing the syndromes in animals It is to be hoped that BYWATERS and his associates will be spared this handicap and that the problems of " crush " kidney may be solved in time to save many of the lives which will otherwise be lost

EVACUATION OF ARMY CASUALTIES

THERE is growing evidence that the Army organisation and equipment for the evacuation of casualties from the front line to the base hospital requires modification to meet the circumstances of the new mechanised and mobile warfare War on land is approximating more and more to war at sea There are no fronts, superiority of equipment results in rapid and overwhelming advances, and thanks to aircraft the range of fire is now unlimited In addition, the stations and personnel for the care of the

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Business hours 9 a m to 6 p m , Saturday to 1 p m Telephone EUSton 4282 (5 lines) rendered less effective. The essential defect is inability of the capillaries to contract after injury. He points out that hæmorrhage in these diseases is mostly localised to skin and mucous membranes, rarely to deep tissues, and that pressure will usually stop the bleeding since it gives time for a clot to form. The prototype of this group is hereditary hæmorrhagic telangiectasia with its localised collections of dilated and inactive capillaries. Hæmophilia and hæmorrhage of the newborn are examples of defects of blood coagulation. The hæmorrhagic tendency in jaundice he places in the third group.

The idea that all the purpuras are diseases of the capillary blood-vessels is certain to meet with criticism —MACFARLANE acknowledges for instance that it provides no satisfactory explanation of the improvement after splenectomy of thrombocytopenic purpura—and it is therefore useful to examine a contemporary contrasting view. NYGAARD,[5] in his book reviewed on another page, has approached the problem by studying in detail the clotting of recalcified blood-plasma under controlled conditions. He is not unmindful of capillary contraction after injury, but he assigns an active rôle to the platelets. He emphasises their exceptional adhesive properties and thinks that platelets are capable of adhesion and agglutination even in face of the blood-stream from injured capillaries, and he describes changes in the size and outline of the platelets before fibrin actually appears in blood-clots. He upholds the theory of DUKE that small vessels may be mechanically closed by platelets and suggests that the platelets that escape into the wound begin to disintegrate at once and liberate thrombokinase which, added to that from the tissue juices, initiates coagulation. With such views it is not surprising that he classifies thrombocytopenic purpura as "of hematologic origin," especially since his methods show some diminished coagulability of the blood in this disease. For the familial athrombocytopenic purpuras he accepts the theory of defective platelets, but the toxic and Henoch-Schönlein types are classified as non-hæmatological.

Research into the causes of hæmorrhagic diseases is certainly in a phase of activity, as shown by the work on vitamin K, on the rôles of vitamins C and P and the presence of thrombocytopen,[6] and now by the reassertion of the importance of the capillaries by MACFARLANE and of the platelets by NYGAARD. When the relative value of all this work can be assessed we ought to have made notable progress towards an ætiological classification of the hæmorrhagic diseases which will be of real help in treatment.

IS ALCOHOL A STIMULANT?

THE belief that alcohol acts as a stimulant has its roots in centuries long past. "Mankind has grown old," said ARNOLD of Villanova, "and has become feeble; therefore God has given him this water of life that he may grow young again." Many other non-medical writers, usually poets, have recorded remarkably accurate observations showing how reasonable it is to suppose that alcohol is essentially a stimulant. HORACE gave the classic description of its psychic effects: "What wonders does not wine! It discloses secrets; ratifies and confirms our hopes; thrusts the coward forth to battle; eases the anxious mind of its burden; instructs in arts. Whom has not a cheerful glass made eloquent! Whom not quite free and easy from pinching poverty!" At the end of the 19th century BINZ and his pupils published a series of papers on the effects of alcohol which they thought could best be explained on the basis of stimulation followed by depression. Their views were probably the more acceptable to pharmacologists and toxicologists because the "pattern" exhibited by alcohol is often seen in the pharmacodynamics of other potent substances. SCHMIEDEBERG[1] opposed this view and contended that the action of alcohol is purely narcotic from the start, and that stimulation is only apparent, depending on paralysis of those cerebral functions which normally play a restraining part. It is nowadays accepted that the increased self-confidence and the assumption of a benevolent communicative disposition are release-phenomena and are attributable to depression of the faculty of self-criticism.

The conception that alcohol might have a selective stimulating action on some parts of the nervous system while behaving as a depressant elsewhere is seen in EMIL KRAEPELIN's[2] work of fifty years ago. He held that alcohol is entirely depressant to sensory and intellectual processes but that the generation of motor impulses is first stimulated and only later depressed; these are essentially BINZ's conclusions restricted to the motor mechanisms of the nervous system. In 1923 a committee of British pharmacologists expressed the opposite view in a publication of the Medical Research Council.[3] From experiment they concluded that the action of alcohol on the nervous system is essentially sedative, that it was not a cardiac stimulant, and that it had no noteworthy effect on respiration in moderate doses though in large doses it paralysed the respiratory centre. They pointed out that the reflex stimulation of the heart and respiration which follow irritation of the buccal and pharyngeal mucosa by alcoholic beverages must not be credited to the alcohol itself; in wines the bouquet due to higher esters may similarly confuse the issue. In order to eliminate the indirect results of psychical instability engendered by communicative companions the subject of the experiment, they insisted, must be segregated. The reader is left with the conviction that whatever may be the merits of alcohol as a therapeutic agent (and they are not to be underrated) it does not qualify for the description of "stimulant." But this does not mean that the last word has been said or that the work of BINZ and his followers is discredited. On the contrary, recent experimental findings suggest that within certain limits of dosage the alcohol metabolised by the nervous system may produce stimulation after all. The uncertainty dates from a study made by J. D. ROBERTSON and C. P. STEWART[4] some ten years ago showing that the oxygen uptake of the brain is significantly increased during the first hour of alcoholic intoxication. MASSERMAN, BEALE and SANDERS[5] have recently been working with cats to determine the action of ethyl alcohol on cortico-hypothalamic function. Under wounded have clearly become—in the enemy's eyes—military objectives of some importance Rapid evacuation to a point at which skilled surgical treatment can be given has always been recognised as fundamental, it has now become all-important It may indeed be cynically suggested that Hitler can conquer a European country in the time taken for a single casualty to pass through the traditional hands of the regimental aid post, advanced dressing station, main dressing station and casualty clearing station to base hospital In the article on medical organisation in the Royal Army Medical Corps and the Spanish Republican Army which appears on another page the suggestion is made that the advanced and main dressing stations should be replaced by an advanced casualty clearing station, consisting of small mobile teams complete in themselves, which can be rapidly evacuated or reinforced An alternative is the scheme actually evolved in Spain in which a classification post was substituted for the advanced dressing station and main dressing station and the casualty clearing station was pushed forward into the position usually taken by the main dressing station As a result of experience in France, Colonel J C Dowse [1] has come to a similar conclusion In his view the ideal is for a casualty to be "collected in a motor vehicle as near the regimental aid post as possible, taken to a medical post where rapid first-aid can be given, and from there sent direct to the casualty clearing station—i e, cutting out one of the present posts, either the advanced dressing station or the main dressing station All that is required is that there should be but *one* 'sorting' office in the divisional area where first-aid can be given to the wounded man after he leaves the regimental aid post, whether this place is called an advanced dressing station or a main dressing station is quite immaterial The casualty should not be moved in and out of two cars before he is sent on his final trip to the casualty clearing station" But this can only be done if the number of ambulance cars in the division is considerably increased and the composition of the field ambulance greatly modified Even the present establishment is inadequate to stand the strain of the inevitable overloading, and equipment requires overhauling in other ways For instance, Colonel Dowse points out that the water-cart trailer cannot be backed for any distance and may cause chaos in a mobile column in which it is the only trailer vehicle These deficiencies, and particularly the question of the redundancy of either A D S or M D S, deserve careful consideration

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[5] Nygaard, K. K. Hemorrhagic diseases: Photo-electric study of blood coagulability. London, 1941.

[6] See Lancet, March 15, 1941, p. 356.

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[3] Alcohol: its Action on the Human Organism. London, 1923.

[4] Biochem. J. 1932, 26, 65.

[5] Masserman, J. H., Beale, J., and Sanders, R. J. Pharmacol. 1940, 70, 450.

THE HÆMORRHAGIC DISEASES

We cannot hope to understand or control hæmorrhage, says Macfarlane,[2] unless we are fully familiar with the normal mechanism of hæmostasis He points out that three factors, at least, are involved the coagulation mechanism of shed blood, the blood-platelets, and the injured blood-vessels themselves When capillary blood-vessels are injured they remain for a short time dilated because the tissue damaged in the injured area liberates Lewis's "H" substance, the H substance diffuses, or is washed away, and then the capillaries actively contract so that no more blood enters the wound The blood that remains in the wound soon clots, the presence of tissue juices and degenerating platelets producing the thrombokinase which initiates the clotting By the time the capillaries dilate again a firm clot is in position, a clot firm enough to withstand the blood pressure within the capillaries, and so hæmostasis is secured In this sequence Macfarlane regards the capillary contraction as the most important factor Coagulation of the blood will not of itself stop bleeding, small punctured wounds made into the skin of animals whose blood has been rendered completely incoagulable do not bleed any longer than usual, there is a definite latent period before clotting of the blood begins, minutes elapse before a firm clot forms, so that the mere presence of issuing blood would suffice to prevent its formation He thinks that the blood-platelets are only of importance in producing the kinase which initiates clotting and possibly in assuring proper clot retraction, he does not see how without cessation of the blood flow platelets can agglutinate sufficiently to plug the mouths of the vessels The figures he quotes make it clear that the correlation between spontaneous hæmorrhage and diminished blood-platelets does not hold, everyone sooner or later meets with the patient whose low platelet count is unaccompanied by hæmorrhages and other patients have hæmorrhages with excessive blood-platelets [3] There is, moreover, the curious phenomenon that splenectomy often cures the hæmorrhagic tendency in spite of the fact that after a postoperative rise the blood-platelets return to their former low level

So we must turn to the capillary blood-vessels Magnus in 1924 noted that they disappeared after an injury, Macfarlane in his experiments limits trauma by pricking individual capillaries in the nail fold observed under a skin microscope, and he finds that in most normal subjects there is hæmorrhage for a few seconds, then the capillary disappears and does not reappear for 20–120 seconds, the capillary contraction is active since it is maintained against a venous back-pressure of 30 mm Hg There is some variation in the response and in two out of his twenty subjects no response at all was observed Parallel observations were made by Ivy and others,[4] who found that the bleeding-time was normally unaffected by a venous back-pressure of 40 mm Hg, but in some purpuric patients it could be greatly prolonged by this means even though platelets and coagulation time were normal, thus suggesting that "toxic damage" to the capillaries can by itself be a cause of hæmorrhage On this basis Macfarlane proposes a classification of the hæmorrhagic diseases into three groups those due to defective capillary contraction, those due to defective blood coagulation, and those due to a combination of these causes Into the first group he puts all the purpuras, thrombocytopenic and athrombocytopenic In four cases of the former and five of the latter he found irregular and distorted nail-fold capillaries that did not respond to puncture, and in one case of symptomatic purpura (aplastic anæmia) the capillaries were regular but did not respond to puncture He does not think that qualitative or quantitative deficiency of platelets matters at all, except that clot retraction may thereby be endered less effective The essential defect is nability of the capillaries to contract after injury He points out that hæmorrhage in these diseases is mostly localised to skin and mucous membranes, arely to deep tissues, and that pressure will usually top the bleeding since it gives time for a clot to form The prototype of this group is hereditary hæmorrhagic telangiectasia with its localised collections of dilated and inactive capillaries Hæmophilia and hæmorrhage of the newborn are examples of defects of blood coagulation The hæmorrhagic tendency n jaundice he places in the third group

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[1] *Jour R Army med Cps* March, 1941 p 127

[2] Macfarlane, R G *Quart J Med* January, 1941 p 1

[3] Reid J *Lancet* 1940 2 584

[4] Ivy A C Shapiro, P F and Melnick P *Surg Gynec, Obstet* 1935 60, 781

The idea that all the purpuras are diseases of the capillary blood-vessels is certain to meet with criticism —MACFARLANE acknowledges, for instance, that it provides no satisfactory explanation of the improvement after splenectomy of thrombocytopenic purpura —and it is therefore useful to examine a contemporary contrasting view NYGAARD,[5] in his book reviewed on another page, has approached the problem by studying in detail the clotting of recalcified blood-plasma under controlled conditions He is not unmindful of capillary contraction after injury, but he assigns an active rôle to the platelets He emphasises their exceptional adhesive properties and thinks that platelets are capable of adhesion and agglutination even in face of the blood-stream from injured capillaries, and he describes changes in the size and outline of the platelets before fibrin actually appears in blood-clots He upholds the theory of DUKE that small vessels may be mechanically closed by platelets and suggests that the platelets that escape into the wound begin to disintegrate at once and liberate thrombokinase, which, added to that from the tissue juices, initiates coagulation With such views it is not surprising that he classifies thrombocytopenic purpura as "of hematologic origin," especially since his methods show some diminished coagulability of the blood in this disease For the familial athrombocytopenic purpuras he accepts the theory of defective platelets, but the toxic and Henoch-Schönlein types are classified as non-hæmatological

Research into the causes of hæmorrhagic diseases is certainly in a phase of activity, as shown by the work on vitamin K, on the rôles of vitamins C and P and the presence of thrombocytopen,[6] and now by the reassertion of the importance of the capillaries by MACFARLANE and of the platelets by NYGAARD When the relative value of all this work can be assessed we ought to have made notable progress towards an ætiological classification of the hæmorrhagic diseases which will be of real help in treatment

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[1] Jour R Army med Cps March, 1941 p 127

[2] Macfarlane, R G Quart J Med January 1941 p 1

[3] Reid J *Lancet* 1940 2 584

[4] Ivy A C Shapiro P I and Melnick P *Surg Gynec, Obste* 1935, 60, 781

The case for treating human subjects along these lines seems unanswerable Vaughan Hudson and his colleagues mention a favourable issue in 2 instances where resection of the gut for intestinal obstruction was necessary On the medical side K M Alford[3] finds that sulphonamide therapy has greatly reduced the mortality from acute diffuse peritonitis at the Hospital for Sick Children, Toronto He stresses the importance of needling the peritoneum at an early stage in order to identify the invading organism, and recommends oral sulphanilamide for streptococcal infections and sulphapyridine for pneumococcal In diffuse peritonitis secondary to neglected appendicitis he supplements surgery with soluble sulphapyridine intravenously until drugs can be taken by mouth, followed by a course of oral sulphapyridine or sulphanilamide, and he is satisfied that chemotherapy has reduced the fatality in these cases also The abundance of recent work supporting the local application of sulphonamides in infective conditions suggests, however, that the intraperitoneal route is fundamentally sound

CALLING UP THE PHARMACISTS

THE new schedule of reserved occupations by bringing the age of reservation of pharmacists up to the age of thirty raises the question of how many can be spared if an adequate pharmaceutical service for civilians is to be maintained About 8400 of the 25,000 registered pharmacists are at present under thirty, and about 20,000 of the total are engaged in chemists' shops, whether as owners managers or qualified assistants About the same proportion—80%—of the pharmacists who will become liable to be called to the colours after July 1 are occupied in the retail business so that if all the 6700 were taken there would be left only 13 300 to conduct 15 000 pharmacies, that being, in round figures, the number of registered shops Hence, if only one qualified person were allotted to each pharmacy it would be necessary to close 1700 chemists' shops if every one of the men liable for military duty was called up The war committee of the Pharmaceutical Society, which includes nominees of the three Service departments and the Ministry of Health has represented to the Government that the maintenance of an adequate pharmaceutical service for the public necessitates the retention in civil life of some, at least of the men under thirty and it is understood that the Ministry of Labour is in accord with the proposition that exemptions shall be allowed in special cases but that the retention of key men in civilian life will be permissible only where they are required urgently for the continuation of a civilian service in their areas The war committee has been charged with the duty of making recommendations regarding exemptions, and has begun a general survey of pharmacies relative to population It is hoped that the information so obtained will make it possible to release a maximum number of pharmacists for military duties with the minimum amount of prejudice to the pharmaceutical needs of the public Special notice will be taken of N H I demands and there will be consultations with the insurance committees and the pharmaceutical committees under the N H I Act Special arrangements are to be made for pharmacists engaged in hospital work The war committee has also undertaken a survey of students to ensure that only those proceeding bona fide to qualification shall be reserved from military service, the cases of all pharmaceutical students will be reviewed individually every six months As many as possible of the pharmaceutical recruits will go into the R A M C as dispensers, but not more than a few hundred can be so absorbed

VERATRUM IN ECLAMPSIA

THE older textbooks of obstetrics often advocate the use of veratrum or American hellebore[1] in the treatment of eclampsia but modern writers either do not mention it at all or condemn it Bryant and Fleming,[2] however, sponsor the drug with enthusiasm Their cases number 120 and cover a period of 15 years so that their conclusions though contrary to the trend of modern opinion, merit close examination They look upon eclampsia as a syndrome of which the essential pathological feature is an abnormal spasm of the entire arteriolar tree They accept the orthodox view that the underlying cause of the spasm is some undiscovered toxin Veratrum has long been known as a powerful vasodilator, and Bryant and Fleming claim that in therapeutic doses it is entirely safe—a claim vindicated by their low fatality of 1 7% They aim at complete control of the eclampsia, and only when this has been achieved do they consider the secondary problem of terminating the pregnancy, in this they adhere strictly to the best doctrines of conservatism The preparation used is not mentioned in this paper, but Bryant has previously reported[3] that he uses Veratrone (P D and Co), a standardised non-alcoholic solution of the active principles of veratrum roughly equivalent in alkaloid content to the B P C tincture An initial dose of 0 6 c cm is given hypodermically, and this is repeated every 10–15 minutes until the pulse rate falls below 60 or the systolic blood-pressure below 120, thereafter, until the patient is conscious, 0 2–0 6 c cm is given again if the pulse rate rises to 80 or the systolic blood pressure to 150 Once the patient is conscious a dose of 0 2–0 6 c cm is given if there is nausea severe headache, visual disturbance, epigastric pain or convulsions

As an adjuvant, 500 c cm of 20% dextrose is given intravenously at the beginning of treatment and repeated

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[2] *Surg Gynec Obstet* March 1941 p 568

[3] *Arch. Dis. Childh* March, 1941 p 43

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[1] Both *Veratrum album* and *V viride* are listed in the B P C The former is a noxious and ugly lily growing on alpine pastures in Europe where it plays havoc with grazing cattle White hellebore root was once used internally for dropsy The latter whose rhizome contains the same alkaloids is indigenous to Canada and the north-eastern U S A and is there known as green hellebore a name given in this country to a pleasant herb of the buttercup tribe a fellow species of the Christmas rose another hellebore Both these British hellebores were also at one time popular remedies

[2] Bryant R D and Fleming J G J *Amer med Ass* Oct 19, 1940, p 1333

[3] *Amer J Obstet Gynec* 1935, 30, 46

Nembutal or light ether anaesthesia needle-electrodes are introduced into the cat's brain, and the effect of electrical stimulation is noted, first when the cat has had no alcohol and then when alcohol has been introduced through the needle electrodes The method is elaborate and artificial, and thus open to serious criticism unless the data obtained are scrupulously controlled A comprehensive preliminary study was undertaken by J H MASSERMAN[6] in order *to meet these objections He reports that simple* electrical stimulation of the hypothalamus induced behaviour suggestive of rage and fear, neutral solutions injected through the needles produced no effect, weak alcohol (0 05–0 1 c cm of 0 1% alcohol in Ringer's solution) made the hypothalamic response to electrical stimulation more pronounced in a significant proportion of experiments Intraperitoneal administration of alcohol (0 5–1 c cm per kg body-weight) did not produce any material change The responses of the posterior sigmoid cortex were not significantly affected by the direct injection of alcohol, but in some instances they were increased by the previous intraperitoneal administration of alcohol It is well known that general anæsthetics and basal narcotics have actions on the nervous system which are predominantly selective for certain strata of th brain MASSERMAN's observations that the stimulatin effect of alcohol on the hypothalamus was abolishe by nembutal, and that its action on the corte disappeared under light ether anæsthesia, are therefor consistent with accepted teaching regarding the mod of action of these anæsthetics, and this evidenc supports his main thesis concerning the pharmacolog of alcohol The graphic records of the pulse rate blood-pressure and respiration included in MASSERMAN's paper show that the injection of 0 1 c cm o 0 1% ethyl alcohol in Ringer's solution produced n direct effect, but the subsequent responses of th hypothalamus to 2 5 volts exceeded those elicited b twice that strength of current before the injection These experiments justify the tentative conclusio that alcohol facilitates certain reactive processes i the brain (especially in the lower diencephalic centres) and if this is so its action is analogous to that o strychnine on the spinal and bulbar reflexes It re mains to determine the therapeutic usefulness, if any of this transient stimulation With the growth o neurosurgery the time seems ripe for the renewal o cooperation between pharmacologist and surgeon o the lines of the fruitful partnership that once existe between CLOETTA and SAUERBRUCH

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[6] *Ibid*, 1938, 64, 335

Annotations

KNOCK ON THE HEAD

DISCUSSING the physical aspects of concussion at the Royal Society of Medicine on April 17, Major Denny-Brown and Major Ritchie Russell quoted experiments to show that concussion in closed-head injuries is caused by a sufficient rate of change of velocity, in the cat and monkey they found a threshold value for change from 0 to 28 feet per second in ca 1/2000 sec This constant threshold of acceleration or deceleration sets aside the factor of momentum, it is the change in speed and not the weight of the brain that matters The momentum attained or arrested may be identical in a man with a helmet and a man without, but the helmet will cushion the blow sufficiently to prolong the time spent in changing velocity, and thus prevent concussion Their observations explain how blast, which imparts velocity at a slower rate than a solid object, seldom has direct concussing effects If the head is supported by a solid mass and thus prevented from moving, concussion does not occur unless the impinging force causes fracture or penetration of the skull In penetrating injuries concussion can result from a sudden change in cerebrospinal fluid pressure, this differs from simple concussion, they find, in affecting respiration more readily and severely When concussion is caused by change in velocity in a closed-head injury there need not be any rise in C S F pressure They found that there is paralysis of all brain stem reflexes in concussion, with recovery of different reflexes at different intervals With graduated blows the four reflexes—corneal, swallowing, pinna and *respiratory—became paralysed when the same intensity* was reached This supports the view that concussion is a direct and generalised physical effect on the neurones, and, like other nervous reactions, requires an adequate stimulus to elicit it Paralysis passes off at different rates in different neuronic elements, and the cerebral cortex may be expected to suffer longest They found a greatly increased blood flow in the cerebral vessels in concussion and also in subconcussive injuries, this is related to stimulation of the depressor fibres of the vagus and glossopharyngeal nerves which suffer damage at the foramen magnum even when the injury is insufficient to cause concussion They therefore reject the hypothesis that cerebral anæmia is an essential componen of concussion A delayed fall in blood pressure wa found to follow vagal injury, if vagal stimulation i intense, post traumatic collapse, shock and even deat may follow Concussion—even fatal concussion—coul arise, they found, without lesions visible in staine sections, and they claim that a sound case for "mole cular change" in nerve cells can be established as basis for concussion

At the same meeting an analysis of retrograde an post traumatic amnesia in 200 cases of head injury wa reported by Dr J W Aldren Turner and Mr Kennet Eden They pointed out that while severe cerebr contusion may produce a lengthy loss of consciousne the onset may be delayed *With superficial penetratin* injuries of the brain there is often no immediate loss o consciousness, but injuries reaching the basal portio of the brain produce deep loss of consciousnes Concussion in penetrating injuries may result from a fal to the ground after the injury Their analysis strengthen the clinical impression that immediate loss of con sciousness is the result of a generalised effect on th brain, though they are inclined to relate it to som form of damage to the basal nuclei

INTRAPERITONEAL CHEMOTHERAPY

THE *bacteriostatic* activity of the sulphonamides i potential and established infections of the peritoneu forms the subject of several recent papers Vaugha Hudson, Smith and Selbie[1] have attacked the surgica problem of acute intestinal obstruction, in which, a they point out, the fatality is still 20–30% in spite o *improved* diagnosis and treatment Their analysis o 670 cases shows that the highest fatality is among thos in which gut has been resected, in these death is du not so much to dehydration and toxæmia as to plasti peritonitis Since it is virtually impossible to avoi peritoneal contamination when gangrenous gut i resected Vaughan Hudson and his collaborators hav tried to combat bacterial infection by chemotherap Early trials with administration by mouth havin proved disappointing in the treatment of postoperativ

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[1] Hudson, R Vaughan Smith R and Selbie, F R *Lance* April 5 1941, p 438

Special Articles

MEDICAL ORGANISATION IN THE R A M C AND SPANISH REPUBLICAN ARMY

OF the many lessons that England might have learnt rom the Spanish war it is not surprising that the more echnical were the more easily assimilated Our debt to pain in the realm of A R P , blood-transfusion, and antiank measures is real, though rarely stressed Military nedical organisation, however, has hardly been menioned, possibly because the number of doctors who have xperience both of the Sanidad Militar and the R A M C s small The differences between the two organisations re worth considering

The R A M C was formed to meet the exigencies of the ast war, when aerial warfare on a large scale was hardly lreamed of Fig 1 is a rough scheme showing its asualty organisation

When a man is wounded the regimental stretcher-bearers apply the first field dressing and carry him to the egimental aid-post (R A P) where he is seen by the M O He is then conveyed to the advanced dressing station (A.D S) by field ambulance or stretcher-bearers, where he only receives such attention as is urgently needed An A D S is formed by one company of the field ambulance It is little more than a collecting centre and is similar to the classification post of the Sanidad Militar It is laid down in the R A M C Training Manual that a walking-wounded collecting post (W W C P) may be established to relieve pressure on the main dressing station (M D S) but that this is not to be done in mobile warfare

From the A D S the sick and wounded are evacuated to the M D S , formed by the headquarters of the field ambulance The personnel and equipment here are not such as to allow of adequate surgical treatment of severe cases, though emergency operations must sometimes be attempted, but in the main the wounded merely have their dressings readjusted and receive their antitetanic serum and hot drinks From the M D S the wounded are evacuated to the casualty clearing station by the motor ambulance convoy (M A C) The C C S is too large a unit to be moved readily, some 48 hours will elapse before such a station can be detrained and made ready to function During war, the personnel is altered o form surgical teams, but these teams must be clearly lifferentiated from the teams of the Sanidad Militar The R A M C teams include only the personnel of the operating-theatre, and though they may be lent to other C C S s they are not complete independent units

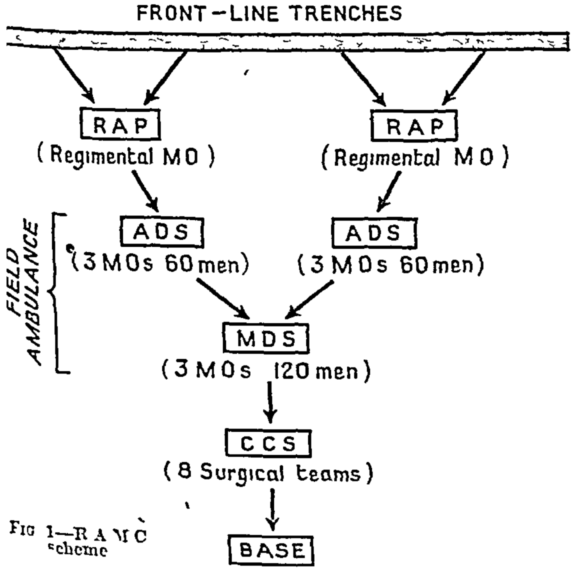

FIG 1—R A M C scheme

The R A M C triple organisation—A D S , M D S , and C C S —was developed in the times when evacuation from the A D S to the M D S was by horse-drawn ambulance, and from the M D S to the C C S by motor ambulance In these days a motor ambulance can usually get very near to the R.A P The two delays for the wounded at the A D S and the M D S without adequate surgical treatment, and the immobility of the C C S , are worth noting In France, owing to the mobility of the front, it was often impossible to find the M D S , and casualties were often evacuated direct to the C C S and even to the base , but light C C S s more mobile than the usual type proved useful

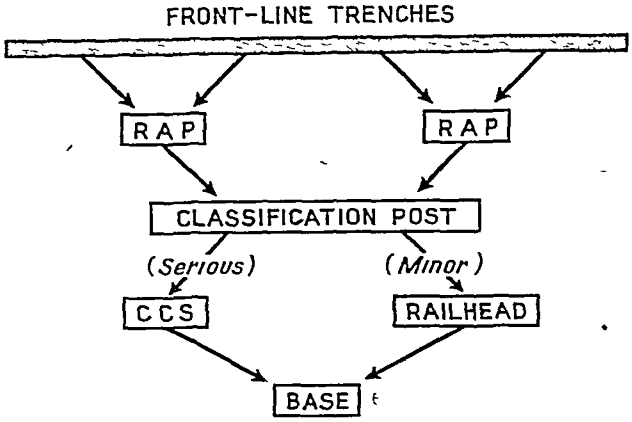

FIG 2—Casualty organisation in Spanish Republican Army

THE SPANISH PLAN

The Sanidad Militar grew up during the Spanish war, and was thus specially adapted to conditions of aerial warfare and a rapidly moving front It is difficult to give details of the organisation as clearly as those laid down in the R A M C Training Manual because it was a growing organisation, constantly adapting and improving itself It was founded on the idea of mobile-teams—surgical, "triage," blood-transfusion X-ray, kitchen and others These were normally under corps control, and had their headquarters at or near the base hospital, where they worked until required elsewhere The teams were complete in every way , thus the surgical teams had their own instruments, sterilising apparatus, operating tables, beds, linen and ward equipment, and adequate transport for equipment and personnel

The "triage" team consisted of 2 doctors, 2 nurses, 4 medical orderlies, 2 barbers and 12–20 stretcher-bearers The job of the team at the C C S was the reception, classification and preparation of the wounded for operation , they also decided on priority of cases for surgical treatment and arranged evacuation of the wounded A similar unit ran the classification posts From such units the casualty organisation was built up, the complete scheme being as in fig 2 The organisation was so flexible that various other schemes could be put into operation as the occasion demanded, such as that shown in fig 3

The regimental aid-post (R A P) was run by the regimental M O and his staff on similar lines to posts in the R A M C It was, however, generally agreed that if gas was used there would be two M O s per battalion The classification post was under divisional control, there being usually two to a division It was staffed by one or more "triage" teams Its function was to check the first-aid given by the R M O or his stretcher-bearers, and to classify the wounded and evacuate them accordingly The classification naturally varied with the type of organisation behind the post, as shown in the previous diagrams The casualty clearing station was built up, as already explained of 6–8 surgical teams with a "triage," blood-transfusion and other teams, all under the control of a medical superintendent Such stations were extremely mobile and the hospitals were often put up in 8 hours They were placed much nearer the front than an R.A M C casualty clearing station—more in the position of a M D S Thus they were always liable to air attack and were sometimes within artillery range For this reason they were placed for choice in caves, tunnels, camouflaged tents in woods, or in cellars every 6–10 hours until consciousness returns , 10 c cm of 50% magnesium sulphate is also given at the start by deep injection and afterwards 5 c cm every 6 hours for four doses and 5 c cm every 12 hours for four doses The patient is catheterised and given a soap and water enema at the beginning of the treatment The pulse and blood-pressure are checked hourly in the acute stages and at short intervals after the patient has recovered consciousness Fluids are pressed to the point of complete hydration, 5 litres a day being given as soon as possible, and a salt free diet is instituted as soon as food can be tolerated Fluid intake and urinary output are checked and the urine examined daily for albumin No sedatives are given except in cases of extreme restlessness or if the patient goes into labour , they claim that the three commonest causes of restlessness in these semi-comatose patients are a full bladder, a full rectum and the pains of labour The results of veratrum may be startling enough to alarm the uninitiated by a sudden fall of blood pressure, with extreme slowing of pulse and respirations (for all of which atropine is an effective antidote if required), and may be followed by a copious vomitus of green or black fluid The usual nursing regime for eclamptic patients must be strictly enforced to ensure proper postural drainage of the mouth and pharynx

According to Bryant and Fleming, in eclampsia a vaso constricting toxin produces hypertension which may be complicated by cardiac failure and cerebral and retinal hæmorrhage , and this vaso constriction causes local anoxæmia and retention of catabolites with resultant focal necrosis in the liver and kidney It is feasible to correlate this clinical picture of a full blown eclamptic with the pathology demonstrable at autopsy Dilatation of the arteriolar tree with veratrum breaks the established vicious cycle, and, by making a normal blood supply available to the tissues, enhances the action of such therapeutic agents as dextrose and magnesium sulphate The primary function of this drug is, therefore, to improve arterial circulation throughout the body and not merely to reduce the effect of hypertension More extensive investigation of the action of veratrum is needed to determine whether we have not prematurely discarded a powerful therapeutic weapon The maternal mortality of 2 cases in 120 is especially remarkable in that both patients died of puerperal sepsis, long after control of the eclampsia and delivery The gross fœtal mortality was 28 8%, the greatest number of deaths being in the antepartum eclamptics It must not be forgotten, however, that Bryant and Fleming also used hypertonic dextrose and magnesium sulphate, both of which are potent agents in the reduction of a high blood-pressure

THE PLACE OF BIOPSY IN DIAGNOSIS

In discussing the limitations of biopsy in X ray therapy Dr F Roberts asks whether this method of diagnosis is not sometimes carrying things too far In cases of doubt it is clear that every possible means should be adopted to reach a definite diagnosis but there is another class of patient to which he refers, where clinical and radiological examinations have already provided clear evidence of malignancy, and here Dr Roberts suggests that biopsy is being performed partly from the conscientious motive of making assurance doubly sure and partly out of academic interest This practice is nowadays rare in a well explored field such as carcinoma of the rectum, and is generally viewed with disfavour in sarcoma of bone where the risks of dissemination are serious, but it is becoming an increasingly common practice in carcinoma of the lung As Dr Roberts puts it, from seeing the growth with the bronchoscope to removing a piece for microscopical examination seems such a short and logical step to take His arguments against undue enthusiasm in this direction are (1) excluding some uncommon endobronchial tumours (e g adenomata) radiological examination in carcinoma of the lung, especially with the aid of lipiodol, " gives us a diagnosis as certain as anything in medicine can be certain " , (2) to put a very sick person through another ordeal when he has a drastic course of treatment in front of him shows a lack of confidence in well proved methods of examination , (3) it is not always possible to remove by bronchoscope a representative portion of growth, and failure to do this may confuse the issue , (4) in the present incomplete state of our knowledge the conduct of a course of X ray treatment cannot be influenced by the finer degrees of malignancy seen microscopically—to the radiotherapist a mass is, as a rule, malignant or not And as a corollary to this last argument Dr Roberts expresses the opinion that there is no known relation between the finer graduations of malignancy as seen microscopically and the subsequent clinical course This last argument, he believes, raises the fundamental question what is malignancy ? To the pathologist, he answers, it is something determined by certain histological appearances , to the clinician and radiotherapist it is something which is going to kill the patient either by local growth or by dissemination, and it is the business of the radiotherapist to try and save this patient's life or at least ameliorate his condition without too much regard to the pathological distinctions Therefore, he says, the radiotherapist should not insist on biopsy except where the diagnosis is in doubt But the case is not quite convincing It is questionable if everybody will accept the simple practical implication that cancer of the lung is something that is going to kill the patient either by local growth or by dissemination and that histological appearances are relatively unimportant It is not clear, for instance, whether Dr Roberts is including malignant disease of the mediastinum, in which the clinical course is different from that of carcinoma of the bronchus, in his broad simple classification Surely a great deal depends on the stage at which patients come under observation As they tend to come earlier there will be more doubtful cases needing biopsy diagnosis

G W CLARKSON KAYE, D Sc , F R S

The new science of physics in relation to medicine has lost one of its pioneers and a most outstanding personality by the death on April 16 of Dr G W C Kaye Born in 1880 at Harrogate, the son of an architect, Kaye showed an early interest in physics and as a boy in the upper school assisted his physics master in operating one of the first X ray tubes used in this country He had a brilliant career at the Royal College of Science and later at Cambridge, where in 1905 he began research into the properties of X rays, with particular reference to the laws governing the emission of the rays and their absorption in matter In 1910 he was appointed to the staff of the National Physical Laboratory and when, in 1913, the routine testing of radium was begun it naturally fell to his lot to carry out this work His close association with medical radiology dated from the formation in 1921 of a mixed committee to protect from injury, immediate and remote, those who handled X rays and radium His studies on methods of safeguarding workers enabled this committee to make its searching recommendations and to revise them again and again as data accumulated Kaye was thorough in everything he undertook and his wide range of interests led to many calls on his time He was president of the Rontgen Society in 1917–18, of the British Institute of Radiology in 1928–29, and at the time of his death of the Society of Radiographers His merit was well recognised abroad and he was elected an honorary member of radiological societies throughout the world Latterly he gave much thought to needless noise and presided over the commission of the League of Nations which sought means to suppress it

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1 Roberts, F *Brit J Radiol* April 1941, p 114

eme in actual practice on our coasts is shown for nparison in fig 6 It is clear from fig 6 that a ient would have to travel about 50 miles and change bulances twice before he could even have a fracture up in plaster, let alone have a laparotomy A S near the front must be very mobile and placed in a l-chosen site, but the Spanish war showed that this ld be done, and there seems little reason why it uld not be done in England

SUMMARY

The R A M C medical organisation was devised to suit last war and involves two delays for the wounded the advance dressing station and the main dressing tion) before they can get adequate surgical treatment The Sanidad Militar of the Spanish Republican Army s adapted to meet the conditions of aerial warfare d a rapidly moving front , it was founded on the idea mobile teams (surgical, “triage,” blood-transfusion, ray, kitchen) which were complete in themselves ounded were brought from the regimental aid-post to classification post, whence serious cases went to the sualty clearing station and minor cases to the railhead d base Surgical teams at the C C S treated the avely wounded and the rest of the wounded were acuated according to priority The C C S could be up in 8 hours and was placed much nearer the front an an R A.M C station, more in the position of the D S

During quiet periods in Spain the classification post d C C S were replaced by a field hospital staffed by the rsonnel of the post and two surgical teams from the C S The rest of the surgical teams returned to the base d treated the patients they had previously sent back In England the advantages of the Spanish plan might attained by having the C C S in the position of the esent M D S and abolishing the A D S , the latter's nction being taken over partly by the aid-posts and rtly by the rearward formations

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WEEK-END OF INDUSTRIAL MEDICINE

The short postgraduate course in industrial medicine ld in the Birmingham Medical School on April 19–20 as attended by 30–40 practitioners who asked questions d made helpful contacts

Dr J C **Bridge** opened with a review of those sections the Factories Act which concern the work of doctors in ctories, giving them for a moment the semblance of life om personal experience The doctor should, he felt, ntribute more than he had hitherto done to the preven- on of accidents, and therein lay the value of keeping cords A knowledge of factory legislation was essen- al to every doctor entering industrial work and in his eld of work he could count on the cooperation of the actory Department

Mr **Beatson Hird** from experience of thousands of njuries to the eye said that practically all of them could e prevented by better safety measures He also gave etails of first-aid and follow-on treatment They did hese things better in America Proper intensity of llumination at work levels played an important part in he maintenance of health and production , evidence of his was an increase in recent months of cases of eye train In the discussion that followed it was suggested hat Birmingham eye hospitals might do useful propaganda on the preventive side

Mr H A **Hepburn**, H M inspector, South Midland division, surveyed the health hazards and preventive measures in industry from the beginning of the nineteenth century , only at the end of that century was the first medical inspector of factories appointed He thought the industrial medical officer's familiarity with the processes and methods of work in his factory was a fundamental basis of success He had to gain the confidence of the workers, to be tactful and persistent, and it was vital that he should be immediately responsible to the managing director or someone of like status

Dr G A **Auden** dealing with psychological factors in industry said we wished most of all in these days for a feeling of economic security This security was implemented by the Workmen's Compensation and N H I Acts, and by the insurance and pension systems which formed the framework of the working man's life Personality was a screen upon which certain symptoms and signs were projected , worry, using the word broadly, was the inevitable background of psychological problems in industry as outside Vocational guidance and selection had their value but were limited in scope at present , he instanced the tests for aptitude in certain engineering trades done in Birmingham during recent years Good selection should cut down the high juvenile labour turnover so common in the Midlands Accident proneness and the relationship of temperament to fatigue needed further research

Dr **Donald Stewart** gave a demonstration, illustrated by lantern slides, on the organisation of a casualty department in a factory including A R P This was the basis for efficient factory medical services, and made an immediate return in the reduction of absenteeism In many factories accident-rates were increasing and the recent large-scale introduction of doctors into factories gave a unique opportunity of assisting industry and the national effort He discussed the lay-out and equipment of the ambulance room, the staff required for adequate service, the problems of hospital and general-practitioner treatment of accidents, rehabilitation, and difficulties arising with compensation cases

Mr **Hugh Carson** discussed the treatment of burns, and summarised modern views on pathology, giving details of treatment for burns of all degrees and of the part to be played by the factory medical and nursing staff All-important was the prevention of shock Like other speakers he stressed the importance in these days of closer cooperation between factory doctor and medical and surgical specialists The rapid expansion of factory health services was making it possible for the first time to apply present-day knowledge both to the factory clinic and to the rehabilitation of the worker

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WOMEN INTO INDUSTRY

The calling up of women will put at the service of the country a great company of diligent hands The prescription has been ordered, and we must see that it works, in the words of the master prescriber, safely, quickly and pleasantly Otherwise it will disagree Mr Bevin wishes to make sure that worker and employer shall understand each other, and that difficulties which might arise from their inexperience of each other may be forestalled A memorandum on the employment of women addressed to employers, works managers, superintendents and foremen, to be obtained from local employment exchanges, sets out a few steps which can be taken to make the assimilation of women into industry smooth and painless

This leaflet suggests the appointment of a personnel officer, a woman who will be given an early chance to study the operations which women are to carry out and to understand the firm's organisation, wage rates, hours of work and—through the employers' federation and the unions—the method of regulating conditions of employment She is to be responsible for interviewing and selecting women, and also for dismissing them When newcomers are arriving from a distance she will arrange for them to be met and will engage billets for them , she will put them in touch with local organisations, provide them with all necessary information about hours of work and wages She will also ensure that they have an adequate rest room, and she must cooperate with the firm's medical service to keep them well An important part of her task will be to see that the canteen is equal to their needs Women working until 6 P M or later have no opportunity to buy an adequate evening meal, because the shops have shut, and little energy left for cooking It is essential, if they are to keep well, that the canteen should supply a square, balanced and appetising midday meal on such terms that they all take it Some firms have arranged that dismissal should be carried out through the personnel department and this plan is recommended Sometimes dismissal can be avoided by transfer of a woman to another department, and sometimes a discussion with the worker of her side of the case may make it possible to see the difficulty in a new light New candidates must be interviewed sympathetically and with the respect which an opportunity for mutual service should ensure the employer needing labour and the applicant being willing to supply it There should be no long waits in windy corridors,

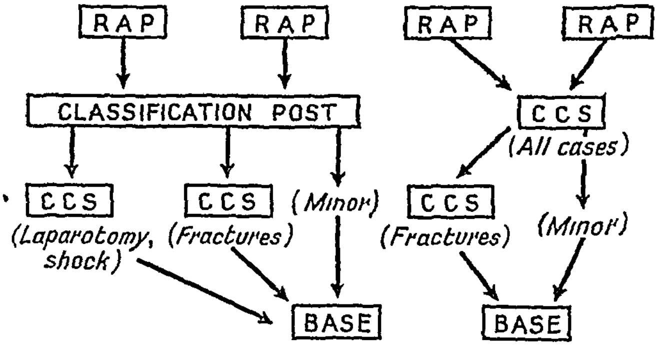

FIG 3—Variation of the Spanish plan

The object of the peripheral part of military medical organisation during action is to get the wounded back to the base in the best possible condition This naturally implies different types of treatment for different types of wounded a man with a minor flesh wound after receiving his antitetanic serum can go straight back to the base, while one with an abdominal wound with perforation of the bowel must be operated on as soon as possible The work falls into two parts first-aid (which includes collecting and classifying the wounded, and the injection of antitetanic serum) and surgical treatment In first-aid it is important (*a*) that all wounded should be seen by at least one M O before setting off for the C C S (it is not always possible for the regimental M O to see all the cases, and there must be one M O behind him), (*b*) that the wounded should be collected in such a way as to facilitate evacuation, and (*c*) that once the wounded have received adequate first-aid the journey to the C C S should be as rapid and uninterrupted as possible

If we compare the relative advantages of the two systems, we see that—apart from the personnel—the R A P and A D S of the English system correspond very closely to the R A P and classification post of the Spanish The position of the M D S, however, seems anomalous, all cases arriving at it have already received adequate first-aid and there is no possibility of adequate surgical treatment there The M D S thus merely seems to delay passage to the C C S, where surgical work (laparotomies, plastering of fractures) must be carried out before the wounded can be evacuated further The object of the C C S is to perform these operations as far forward as is compatible with safety The R A M C solution is to have a large hospital some 25–30 miles back This means a long delay before operation, and the distance adds little to safety when aerial attack is continuous Its large size makes the hospital a good target and renders it relatively immobile The Spanish solution was to have two or more small C C S s (in the position of an M D S) and to rely for protection from the air on their small size and their location in cave, tunnel or cellar Depending as they did on surgical teams they were extremely mobile, and the number of surgical teams was easily adapted to the number of available sites

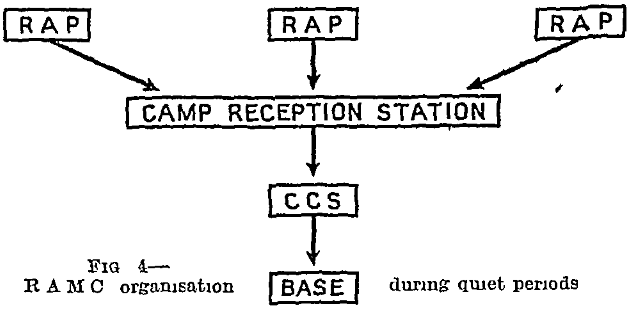

FIG 4—R A M C organisation during quiet periods

QUIET PERIODS

During intervals of comparative quiet the R A M C organisation can be used as in fig 4 The field ambulance reception station or hospital receives all men who cannot be dealt with by the regimental M O but are not sufficiently ill to be sent back to the C (cases of scabies, impetigo, influenza or tonsillitis) most, a quarter of the field ambulance is needed for work, and in England at present the C R S s are by V A D s, 4 orderlies and 1 M O, leaving the rest of the field ambulance M O s, other officers and men to wait and train In England now men can be sent to the E M S hospitals as well as military hospitals In Spain, during such quiet intervals, the classification post and the C C S disappeared and a field hospital was formed, usually from the personnel of the classification post and two surgical teams from the C C S under the medical superintendent This did the same work as the C R S of the R A M C, but also undertook emergency surgery and "cold" minor surgery The rest of the surgical teams returned to the base and were able to treat the patients they had sent back after operating on them at the C C S The R A M C plan has the advantage of maintaining the field ambulance in readiness for any need but it does not make the most economic use of doctors nurses and orderlies The Spanish plan keeps all the personnel occupied and the C C S can be reconstructed within 8 hours

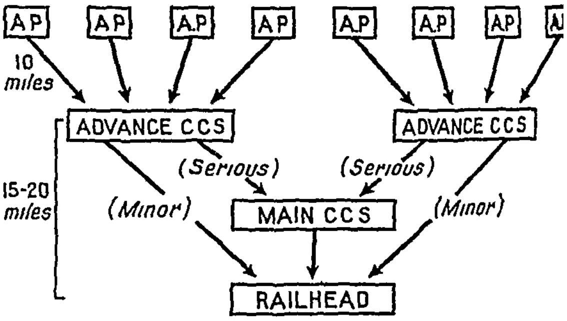

FIG 5—Suggested modification of the Spanish scheme for use in England

PROPOSED SCHEME

The advantages of the Spanish system seem to be these

1 Owing to the abolition of the M D S and the use of small advance C C S s the wounded receive adequate treatment earlier

2 Owing to the organisation in surgical teams, the formation of C C S s of various size and degree of specialisation i much simplified, and their mobility much increased At th same time medical mobilisation is much easier, as is the inter change of medical personnel between military and civilian hospitals

3 Thanks to the substitution of a field hospital for a fiel ambulance, unnecessary idleness of medical personnel avoided

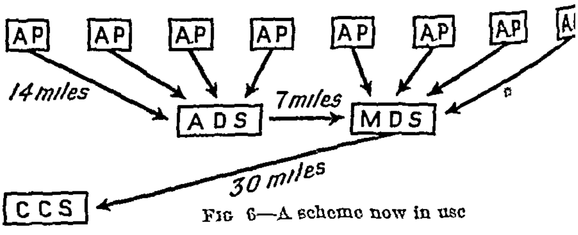

FIG 6—A scheme now in use

The position for the defence of England is, of cour different from that in Spain, but the Spanish organisa tion might be sufficiently adaptable to meet it Owin to the coastal positions of battalions in this country whence evacuation might prove difficult, it would b necessary to have probably more aid-posts per battalion these requiring 3 or 4 ambulance posts In such cases classification post would be difficult to arrange and i would seem much better to use the personnel of th classification post to man the numerous aid posts This would involve bringing an advance C C S, with sa 2 or 3 surgical teams, further forward and doing th classification of the wounded there The increase number of doctors at the front would ensure that al wounded were seen by an M O before being sent to th C C S The suggested scheme is shown in fig 5,

In England Now

Running Commentary by Peripatetic Correspondents

On this headland winter loiters till the snow leaves the lls to lurk only in the deep corries, and war is never mote from a seaport town these days Winter and ar together made keen the prospect of a few days the warm south Not that work has been dull, for sides new jobs there have been some intriguing oblems in the daily round and one in particular which ad to wait solution till the end of the holiday It all arted when a suspicious obstetrician questioned the onesty of one of the best foster-mothers to the hospital ere was a woman who was supplying a profuse ration human milk at a mere twopence an ounce to the ospital and doing a job of work which in veterinary rcles at least would have been hailed as a record But rodigies are suspect, and she was doubted because the uantity of milk was unphysiological and because the aby who was receiving the milk wasn't doing as well s the obstetrician hoped But there it was, the stounding bottle of milk arriving daily, smelling and ooking like fresh human milk, but in the eyes of authority urdled and sour And so off it went to the biochemist ith the brief, unpleasant note " ? cow's milk " To the iochemist it looked simple, for had he not his protein, at and sugar contents to juggle with ? Humans and ows haven't yet agreed to standardise these fractions or the duration At this stage someone spilt the poor oman's own story to the biochemist and he responded ith all sorts of technical difficulties The milk he said might be simply watered human milk or a mixture of uman and cow's milk or just cow's milk with the sugar nd other things sabotaged *Besides, the tests weren't* onclusive and who was to condemn a decent woman on uggestive tests ? With the glad heart of a man who has one his work well the biochemist passed the buck to he pathologist who with less opportunity for scientific uibbling began to interest himself in the motives for his rare outflow of precious fluid The obstetrician's cynical theory that the twopence per ounce was important could be dismissed at once, but a hint that the lady had previously come near to the record was a good lead No doubt she remembered the hospital's gratified delight during the former peak of production, and it was time for a new draught of pleasure Reluctantly the rabbits were injected and at this point my holiday began

London seen for the first time in two years didn't cause surprise—it was so familiar that one might have been living there all the time The cinema has dulled the edge of fresh visual impression How much has that series of anti-war films of the 1930's contributed to the calm strength of Londoners ? Instead of instilling the dread of war into folk, it seasoned them to sights of horror and devastation, and many of the people I met talked and acted as if they were actors in a gigantic play The bobbies joked about the time-bombs, and the street cleaners swept and shovelled with an air of secret pleasure Consciously or unconsciously they feel they are working with the whole nation—much of the world in fact—as an audience It is only on the folks who sit at home and on those who have just felt disaster that the real *grimness presses* It will be another Sassoon rather than another Hemingway who will write a true picture of the battle of London for folk to come

In Berkshire life was pleasant, and riding over the waste downland with a stable-man who spoke of a good horse with " the head and neck of a duchess and the rump of a cook " it was joy to hear of crops and magpies and the lost art of thatching Riding on the straight Roman road, " bare, like the thin parting-line in hair," it was comfort to think of the dynasties that this simple line had outlasted In the Barley Mow I learned that the big doctor who lived down in the valley was in town having two teeth pulled, and I shared the pleasure of the teller who revelled in the thought that the great folk had to suffer just like us Down at Ye Olde Lanthorn, in the market town, the retired surgeon-commander's face changed its mahogany serenity only once to tell how interlopers from the city had caused pink gin to be rationed and thereby scuttled his staple diet, but he soon brightened to the irrelevant *and far-off tale* of how his ship sank at Jutland The peace of Berkshire and the home counties had done its work, and not even the sight of more fish in the shops of the Thames resorts than we had seen in weeks at our own great fishing port could make us angry In the northbound train a Canadian sergeant drank to the damnation of all mountebanks in governments and offices, and to the day when those who did a real job of work would get their due reward And as the train curled round the leaden bay at home we *remembered the patient merit of the foster*-mother who had tried so well, only to be scorned by the insolence of office Alas, the milk she had so generously supplied seemed from the serological tests to have a bovine as well as a human origin Depression was set for the bottomless pit when the lab boy suggested that it would be the most natural thing in *the world* for a woman to keep the *milk in an ordinary* milk-bottle Our reputation for kindliness as well as accuracy had been saved and over the clean city the spring sun began to filter through

* * *

My friend the surgeon uses a stethoscope occasionally and keeps it in his bag Recently he had to leave the end-piece at the shop for repair because the vulcanite bell was broken , then he forgot all about it Some time later he saw a patient in his consulting-room, and it became clear that even a surgeon must examine his chest and take his blood-pressure He opened the little drawer in his ingeniously constructed bag, and pulled out the binaural ear-piece from which dangled forlornly two lengths *of rubber tubing He was not nonplussed* Once more he delved into the bag and, emerging with two aural specula, carefully inserted one into each dangling end of rubber As he moved about the room, they jingled as charmingly as cow-bells in an alpine pasture The stethoscope, being now bimanual as well as binaural, was effective enough in auscultation of the heart and lungs, but took some manipulation *in determining the* blood-pressure However, the task was well and truly done in the end These *easy* triumphs, I fear, went to my friend's head Full of enthusiasm at his triumphal though *primitive invasion of the* sphere of the physician, *he recalled other great auscultators* who despite simple tools blazoned their names on the page of history He remembered Laennec, he did not forget Skoda Seizing each shining little silvery bell, he placed one in the right axilla and the other in the left, and listened with a growing wonder I cannot but think that this was a moment of initiation , that from that hour, like Lydgate in George Eliot's " Middlemarch," he must have felt the growth of an intellectual passion " The moment of vocation had come, and before he got down from his chair, the world was made new to him by a presentiment of endless processes filling the vast spaces planked out of his sight by that wordy ignorance which he had supposed to be knowledge " The patient was deeply impressed

* * *

In the country road where we live we all keep dogs , and such is modern dog-snobbery that they are all well-bred dogs, mostly large Mr Bale's Alsatian starts the row, young, debonair, elegant, coloured like a Jersey cow , then there is Mr Chives's golden retriever, harmonious, easy moving like oil , next comes our Porkie, black as the devil, a Staffordshire bull-terrier, blunt-nosed, solid, foolish and conciliatory Miss Treacher's Chris, a fat spaniel, owns the next garden, *and then there is* Mrs Cummings's cat, Frederick, who is practically a dog and goes for walks with her At the end of the row are two or three rather worthy Aberdeens , there is thus a decline in gross volume, though not in blood or dignity as you pass along the line We thought of having a dog *show*, *not on* breeding—for who shall judge between these appalling aristocrats ?—but on qualities of *disposition*, personal charm, humour and effrontery The general feeling was that Porkie would do well *on every* human quality except intelligence Chris would display the advantages of an enlightened self-interest, the Aberdeens would prove cautious and reliable *to a dog, the* Alsatian would cash in on his *manners* the retriever on his bonhomie, and that Frederick would sneer We thought of leading *them* out one fine May morning care and war set aside, into a neighbouring meadow and getting down to brass tacks —Mr Bale, plump and cosy behind his sauntering Apollo no hungry delays during meal-times, no formidable and daunting forms to complete Once appointed, the new worker is to be introduced to the forewoman, and commended to the care of a fellow worker for two or three days so that she learns her way about cloakrooms, canteens and strange departments The highest turnover of labour occurs in the first month, perhaps in many cases because these simple civilities are forgotten The personnel officer, it is suggested, should have a word with the new worker every day for the first week, twice during the second week and once during each of the succeeding weeks A little friendly conversation can ease tension, discover objections and smooth the period of settling down

Working hours for women demand realism It is recommended that the maximum should vary between 48 and 56 hours a week, but schemes for part-time employment of women are suggested which are likely to be much more popular especially among those who are married At present many women who are still looking after their homes are working 8 or 9 hours in the factory six days a week and then doing their housework in the evenings and on the seventh day, so that their actual working hours are much higher than the number credited to them This can only lead to breakdown and loss of labour

No mention is made in the memorandum of the training suitable for a personnel officer, normally these posts would be filled by workers who had taken a two years social science course, but to meet the urgent need for competent officers the Ministry of Labour has arranged special courses, lasting three months, for suitable candidates Courses have already been held at the London School of Economics and the Universities of Liverpool and Birmingham, and have been completed by the first seventy candidates New courses are now beginning at Liverpool and Edinburgh Universities Candidates are chosen by a selection board of the Ministry from people on the supplementary register, as far as possible those with previous experience of industry are picked All tuition fees and travelling expenses during training are paid by the Ministry, and candidates receive a maintenance allowance of 26*s* a week while living at home and £2 10*s* while living away The first month of the course is spent in theoretical work, lectures and discussions, during the second month the candidate is attached to the personnel department of a factory and gains practical experience of the work she will have to do, she returns to the university for the third month to continue, with more insight, her study of industrial law, economic and industrial history, canteen management, selection tests, interviewing, heating, lighting and ventilation and problems in mental health There is no examination, but she is expected to write a detailed report of her month of practical experience The syllabus was drawn up by the Institute of Labour Management and the Industrial Welfare Society and accepted by the Ministry An account of it by a candidate in training [1] seems to show that it covers the ground in a balanced and exciting manner

MEDICINE AND THE LAW

Noise An Injunction Refused

SOME weeks ago, in the Stourbridge county court, a plaintiff claimed damages and asked for an injunction because of the interference of a neighbour's noises with the comfort of his home He went to bed, he said, at 10 30, as he had work of national importance to do by day, but his next-door neighbour's wireless loudspeaker, use of a piano and jazz drum, and hammering, sawing and chopping of wood was so excessive and unseasonable that he could get no sleep In actions of this kind, as is probably well known, plaintiffs should keep notes of dates and times so as to present the court with detailed particulars of the alleged nuisance The plaintiff did so, there was also evidence that he and his wife had required medical treatment for their nerves, though the doctor agreed in *cross-examination* that nervous affections which could be ascribed to the war, the blackout and the occasional gloom of broadcast announcements were not uncommon The neighbour denied that his noises were unreasonable, and that his house was empty at some of the times plained of

The county court judge observed that he had to decide whether the use of modern instruments of music had infringed the rights of a resident in a modern sem detached house He had the guidance of the judgmen of Lord Selborne in Gaunt *v* Finney (1872) "it is every occasional or accidental noise which will amo to a nuisance", it is "emphatically a question degree" The county court judge, bearing in mind conditions in which most people are now living, the claim "If my neighbour," to quote Lord Selbo again, "builds a house against a party-wall next to own, and I hear through the wall more than is agreea to me of the sounds from his nursery or his music ro it does not follow—even if I am nervously sensitive o infirm health—that I can bring an action or obtain injunction" Such things, to offend against the l must be done in a manner clearly exceptional a unreasonable The courts have regard to the charac of the neighbourhood and the ordinary use of neighbo ing premises, as well as the time of the alleged noise, day or night The cases in which courts have interve include those of building operations at night, the clat of milk cans in the early morning, a shooting gallery dance-hall and an amateur's incessant devotion music In war-time, since the legal issue is "empha cally a question of degree," the standard of tolerati is possibly lower The State, by regulations made und the Emergency Powers (Defence) Act, claims to restr the remedies for nuisance due to war-work, although the last war it was held (in Chester *v* Bateson) th certain regulations made under D O R A were ul *vires* if they barred the citizen's access to the cour Perhaps it is not amiss to appeal for a little m neighbourliness in war-time People who deliberat make noises to annoy the folk next door, and there seriously interfere with the comfort of the home, w find the courts as ready as ever to grant a remedy

WAR RHYTHM ESTABLISHED

THE work of the London School of Hygiene a Tropical Medicine, though thrown somewhat out of g by the war, is now settling into an effective patte The report for 1940 tells of the whole staff of the depa ment of bacteriology, and some from the department biochemistry, released for work in the Emergency Pub Health Laboratory Service, which indeed would ha been difficult to organise at the outset but for this loan expert personnel Plans had been made to transf some departments of the school to Cambridge, but t has not been necessary For convenience the depa ment of parasitology has removed to the Institute Agricultural Parasitology at St Albans, an event whi has had sad repercussions among the snails Mollus always expect to be waited on with keen devotion, if n hand and foot, of the fine collection belonging to t school, half were transferred to St Albans, liked it n and died, and most of those left behind succumb resentfully on losing the skilled care of Mr Willia McDonald They will be regretted by all taking cours in helminthology Normal courses of instruction we suspended in the autumn of 1939, but two intensi six-week courses in hygiene and tropical medicine we given during the year and were well *attended*, sho courses were also arranged on malaria for Servi medical officers, and on industrial hygiene for welfa workers In October, 1940, the full course for the diplom in tropical medicine was begun again The biochemic department was gravely interrupted by an order September, 1939, to get rid of all inflammable solvent Later it was possible to replace these reagents in sm quantities, with suitable safeguards against fire Coll borative work on immunological chemistry had to b given up because of the incorporation of the staff of th department of bacteriology in the E M S The work the Ross Institute—practical advice to government and industrial undertakings overseas and to commerci companies at home, as well as research and teaching— has been well maintained, and Dr G Macdonald, th assistant director, was put in charge by the Arm Medical Department of the first anti-malaria unit to b sent out of this country uced into a room of about 1000 cu ft as a fine spray nd left there for 24 hours, should kill all hæmolytic streptococci, even when they are hidden in the most awkward ooks and crannies Dr Glass's room was slightly arger (1462½ cu ft), but as the figure of 1 pint for 1000 u ft allows a good margin of safety I think it should till have been quite satisfactory

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[1] O Donovan B *Labour Management*, April 1941, p 53

There is, however, one possible source of error I read hat " during the spraying the windows and doors were ightly shut " and that " after the spraying the ward emained closed for 24 hours," but there is no mention hat the ward was properly sealed For success it is ssential that all the windows, door frames, ventilators nd any other opening should be sealed by covering all possible cracks with strips of gummed paper The flue, f there is one, must not be forgotten nor must the keyhole be overlooked The formalin spray acts, not as a olution of formalin, but by virtue of the gaseous ormaldehyde which is quickly given off when the surface rea is so enormously increased by the act of spraying he liquid This gas diffuses everywhere readily, and owes its power of sterilising most difficult corners to this diffusion. Because of this diffusibility it will escape from the room if given any opportunity, and every crevice through which it can escape must be sealed If this is not done, it is impossible to say for how long a time a lethal concentration of formaldehyde remains in the room, but it may be very short

If I am doing Dr Glass an injustice and the room *was* actually sealed in this way, then I can only conclude that his formalin may have been weak A bottle, once opened, soon loses strength, and for this reason I always prefer to use paraformaldehyde powder, which can conveniently be heated on any tin tray over a spirit lamp One gramme of this for every 10 cu ft will give an adequate concentration

Carmarthen R M FRY.

DEFIBRINATION TRANSFUSION SIMPLIFIED

SIR,—With reference to our article of March 22 (p 405), we find that serum can be recovered from defibrinated blood without the use of a centrifuge In order to obtain satisfactory settling of the corpuscles by gravity it is only necessary to dilute defibrinated blood with from 7 to 8 times its volume of serum If clotted blood is the chief source of serum half a bottle of defibrinated blood (240 c cm) can be added to each Winchester of serum separated from bottles of clotted blood It is convenient to use the screw cap with spout and tongue described in THE LANCET of April 26 (p 536) to hold back the clot and the glass beads while pouring off the defibrinated blood Sedimentation of the corpuscles is virtually complete in 96 hours at 2–6° C

Regional Blood Transfusion Laboratory, Cambridge
G A HARRISON
L E R PICKEN

A HUNDRED CASES OF BREECH PRESENTATION

SIR,—Drs Gairdner and Jackson in their reply to Mr Burns ask for further information about the figures he quoted The figure he gave of fœtal mortality for vaginal delivery of uncomplicated breech presentation at the Liverpool Maternity Hospital was not corrected in any way Breech presentation is classified in the hospital reports according to the recommendation of the subcommittee set up by the Royal Society of Medicine and therefore includes all cases of breech presentation where the baby weighs 5 lb or over and where there is no other obstetric complication The fœtal mortality includes all babies dying during labour, during delivery, or during the neonatal period—i e , until the discharge of the mother from the hospital

During the eight-year period quoted 462 uncomplicated breech cases were delivered with the loss of 30 infants , but of these 7 died from causes unconnected with the presentation During the same period there were also 163 cases of uncomplicated breech delivery in multiple pregnancy from which no child was lost The " corrected " fœtal mortality for the 625 cases would therefore presumably be 3 68% The hospital however prefers to quote the uncorrected figure for fœtal mortality in breech presentation—viz , primigravidæ 6 23% and multiparæ 5 5%

MARY MAYEUR,
Resident Obstetric Assistant
Liverpool Maternity Hospital

BONE GRAFTING THE SCAPHOID

SIR,—Squadron-Leader Armstrong's contribution in your last issue to the treatment of fractures of the scaphoid bone is of particular importance at this moment, because the injury is so often sustained by pilots and skilled technicians of the Royal Air Force and no doubt also by members of the other fighting Services who are drawn from the same age-group Furthermore the time factor in the treatment of these injuries is now of vital significance, and any measure which offers hope of accelerating recovery is worthy of serious consideration

In an annotation (p 546) you quote the views which I held when last I wrote upon this subject I then believed that bone grafting was indicated only in a small number of fractures with established non-union, and not in fractures with " cavitation " and decalcification in which union could be secured with no less certainty by plaster immobilisation alone I still believe that simple delayed union can be treated successfully by adequate and continued immobilisation in plaster, but if it can be shown that union is accelerated by the increased immobility of a well-placed bone graft, then military necessity dictates that this shall become the treatment of choice During the last twelve months I have had many opportunities of seeing Armstrong's work, of watching the treatment of similar cases in the hands of other orthopædic surgeons of the Royal Air Force, and of myself employing the admirable technique he has developed There is now a growing volume of evidence which suggests that a skilfully performed operation may reduce the incapacity period and I hope that it will soon be possible for Armstrong to report a much larger series of cases

Meanwhile, however, it must be recognised that the bone-grafting technique demands a high standard of operative skill, that it necessitates perfect team work, and that it cannot be performed without special apparatus and facilities for radiography in the operating theatre Without these amenities it is better that delayed union of fractures of the scaphoid bone should be treated by the equally certain if somewhat slower method of adequate and continued immobilisation in plaster.

Liverpool R WATSON-JONES

THE CASE FOR MASS RADIOGRAPHY

SIR,—The impression conveyed by your leader of April 19 is that mass radiography is a reliable routine method of examination of recruits for the Services or even of communities There are a number of reasons why many of us would disagree with this

(1) Radiography is an ancillary investigation which should not be applied unless an adequate clinical examination indicates a need for it It is the clinical condition of the patient and not the radiographic appearances which matter

(2) Miniature radiography is unreliable in its negative findings and inferior to ordinary direct radiography. The screen image can be clarified by the use of a focused grid between the patient and the fluorescent screen, and the thin metallic strips of the grid will not be seen on the screen or shown on a miniature photograph of its image *because of the blur effect of the screen* , but the grid cannot be left in place for direct radiography because the lines of the grid would be too conspicuous Surely, if the detail of the metallic grid can be blurred out from the miniature but clearly shown on the direct radiogram, the detail of disease shown on the direct radiogram will also be blurred out Many times I have been astonished to see on the direct radiogram definite evidence of miliary tuberculosis and other lesions of the lung of which the screen image had given no suggestion Even with the best radiography it is my experience that clinical signs precede radiographic in at least as many cases as radiographic precede clinical

(3) A fair proportion of the positive findings with miniature radiography were found to be fallacious Though they may be of no clinical significance an extended and expensive clinical and radiographic examination will be necessary to establish this

(4) The comparison of the two methods should be between the direct film and an enlargement of the miniature photograph of the screen

(5) Mass radiography is used as a substitute or a refuge for poor clinical work Radiographic evidence in

of a dog, Mr Chives fresh from the furrow, a clod with a cosmopolitan, Eve panting after Porkie, a gnat straining at a tank, Chris shuffling unwillingly, a stout pantaloon, behind Miss Treacher's tweeds, and the Aberdeens importantly convoying their naval owner Frederick, we thought, would sit on the fence But it was Eve who suggested that the dogs ought to show us To comfort ourselves for our lack of class when compared with our hounds, we pictured them as keen partisans of our other merits Mr Bale's Alsatian will probably mutter warmly "*Not much to look at perhaps, but a* one-dog man, and what a nose for a bone" The retriever, talkative, vivacious, agreeably aware of himself, would laugh off Mr Chives as a chosen weakness "Terrible creature, I know, but simply marvellous at a rat-hunt, and a beautiful shot I'm completely devoted to him, my dear, so raw, fundamental—he actually wears combinations Talk? My God no, simply dumb Uncouth, do you know? Giaour" Chris with his comfortable old man's wink would grunt "Good cook What more do you want?" And the Aberdeens would rumble sentiments on patriotism with appropriate quotations from Burns and Scott Frederick would mince out "Owner? The word means nothing All this possessiveness is quite fantastic I believe in self-determination, naturally One could scarcely take part in this sorry affair, but one must confess it has its qualities as a spectacle"

And Porkie, what would he do about this family, so little to his credit? When he had starched our crests and powdered our noses (the women) and pressed our flannel bags and twitched our ties (the men) I can see him *looking round wistfully and swinging a doubtful* tail "They go walks, sometimes," he would urge hopefully, "and they keep up a good fire——" It will be no use I can see the amused scorn in the eyes of the retriever, the Alsatian, the Aberdeens and Chris, the cold contempt in Frederick's "What a dreadful bunch of tykes Poor old Porkie! Where did he pick them up?"

* * *

The morning after a blitz on London I went past a church within a yard of which a bomb had fallen, killing several people One has got so used to tumbled stone and twisted iron and blackened ruin that one no longer reacts as at first with sorrow and indignation, but with a certain amount of callous interest I went through the same stages when as a student I first saw the grosser forms of illness A fungating carcinoma then inspired horror and anger and only when one had become habituated to such brutalities and realised how impotent one was to frustrate them could one get that emotion-repressed detachment that is the parent of keen interest There had been thick iron railings round that church at a distance from it of about ten yards Nearest the crater they had simply gone, further away they were partially destroyed, further away still a railing here and there had a few inches missing Some flaw in the metal? Some concentration of the blast? Twenty yards away from the crater there was a window unbroken, seventy yards away many had been sucked out or blown in The apparent capriciousness of blast can often be accounted for, if one takes the trouble to reason the matter out In the churchyard nearer the crater than some of the partially broken railings I saw among other shrubs a common Darwin's barberry in flower I nipped over a rope and some rubble and examined it Some of the flowers were open, and lying close to the petals were the delicate stamens With a shred off my match-box I touched the base of one of them, and it sprang in This trigger mechanism had survived within a distance that had proved too much for stout iron Moral bow before the blast Yes, but bob up again

* * *

With our daily papers down to four pages with an occasional six as a treat, or eight if you can run to 3*d*, and material for them as plentiful or more so than ever, there can never have been such blue-pencilling as in these last few months Yet things were pretty bad two hundred years ago "The valuable article which I sent to the publishers for sordid gain," wrote William Oldys the antiquary somewhere in the 1750s, "was so compressed and played the Devil with by one John Campbell that it was reduced to one sheet instead of two" Poor William

Letters to the Editor

GLANDULAR FEVER

SIR,—I have read with interest the two articles on mononucleosis and glandular fever, by Dr Fuller and Dr Barber, which appeared in THE LANCET of Jan 18 (pp 69 and 71) with an editorial note (p 84) In discussing some of the questions which these papers raise I will use the American nomenclature, for here we are at present wedded to the term infectious mononucleosis Dr Fuller has listed three cases, which presented many of the clinical features of infectious mononucleosis and yet all failed to give a positive heterophile antibody (sheep-cell) test This finding reflects an experience which we, and others in this country, have frequently encountered In fact an unusual report by Erf (*J Mt Sinai Hosp* 1938–39, 3, 113) states that in not more than 40% of their cases of infectious mononucleosis was a positive heterophile antibody test obtained In our own clinic, on the other hand, 90% of fifty cases have given a positive test (*Bull N Y Acad Med* 1939, 15, 43) Obviously the discrepancy is dependent on the clinical diagnostic criteria used in these different clinics, as well as the frequency with which serological tests are made during the disease The question whether there should be a separate category for cases which resemble infectious mononucleosis clinically and yet have negative heterophile tests is often discussed in this country, but until more definitive diagnostic criteria are available it does not seem as if much would be accomplished by dividing them into separate groups Our personal and present opinion with regard to the heterophile antibody test as a confirmatory diagnostic measure in infectious mononucleosis is that (provided one can exclude serum disease) an agglutination in a dilution of 1/64 is nearly always of positive diagnostic value, and a test of 1/32 is of suggestive value, but a negative test does not eliminate the diagnosis of infectious mononucleosis

Two of Dr Fuller's cases (cases 4 and 5) were probably examples of serum disease, and as he points out the serological findings in such cases are explainable on the fact that horse serum contains the Forssman antigen This type of heterophile antibody can be differentiated from the infectious mononucleosis antibody by absorption tests such as those described by Beer (*J clin Invest* 1936, 15, 591) and Davidsohn (*J Amer med Ass* 1938, 108, 289) The blood-counts in Fuller's cases 3 and 4, which reveal a relative lymphocytosis, are more difficult to explain but at least we have seen blood-pictures of this type in cases of throat infection in which horse serum was given In the editorial note on this subject the question is raised whether the use of sulphonamide drugs may not suppress antibody formation in the disease under consideration, as they do in pneumonia, and whether that may not be the reason why the heterophile antibody response was absent in some of Dr Fuller's cases This is a conceivable possibility, of course, although there seems to be some recent difference of opinion on this point too (*J clin Invest* 1940, 19, 179, 307, and 735) At least it may be worth mentioning, however, that cases of infectious mononucleosis with negative serological findings were often noted *prior* to 1936—that is, prior to the introduction of the use of sulphonamide drugs in this country Professor Himsworth (*Lancet*, Feb 8, p 195) suggests that the extent of the monocytosis in these cases may be related to the extent of the heterophile antibody response American students of this disease will look forward with interest to subsequent findings on this point

Yale University Medical School JOHN R PAUL

INFECTED DUST

SIR,—I am sorry to read in your issue of April 19 that Dr Glass has doubts about the power of the formalin spray to remove hæmolytic streptococci from an infected room I am particularly interested in this, as I was working with Dr White at the time she obtained the satisfactory results quoted by Dr Glass, and since then I have myself done many experiments, all of which confirm her findings I will not give my full results here because they will be published shortly in detail, but I have no doubt that

QUESTION TIME

Distribution of Medical Man-power

In reply to a question Mr E. BROWN said that the committee appointed to advise on the distribution of medical man power between the civil and fighting service and general medical practice had made the following recommendations·

All medical establishments, service or civil should be reviewed rthwith with a view to the fullest possible utilisation of medical ersonnel and the reduction of future demands

The services of civilian practitioners in proximity to troops might e further extended

Where the three Services in this country are represented in the me or adjacent areas, further economy should be effected by the doption of the principle of area service

The possibility of temporarily releasing practitioners from the Services for civilian work through the winter months when the demands f the civilian population are greatest should be carefully examined

The employment of alien practitioners admitted to the register in vil hospitals and the Services should be further extended

The employment of final year students as house surgeons or ouse physicians in civil hospitals should be set on foot

The question of the employment of more practitioners from anada and other Dominions should be further explored

The possibility of recruitment of practitioners from the United ates of America is a new factor and action in regard to it should e taken as quickly as possible

An effective organisation for the settlement of questions of riority should be established

E M S Hospitals

In answer to a question Mr BROWN said that under arrangements agreed with the war organisation of the British Red Cross Society and Order of St John of Jerusalem 163 houses with 8454 beds have been opened, and 52 more with 2531 beds are in preparation, as auxiliary or convalescent hospitals for the Emergency Hospital Scheme In these houses 2795 beds are at present occupied, but instructions to bring more beds into use are being issued The usefulness of these hospitals, however, does not depend only on the present occupancy of beds They are required to relieve the main hospitals of suitable types of patients, as and when the pressure on beds develops

Essex County Sanatoria

Mr T E. GROVES asked the Minister of Health if he was aware that at the outbreak of war there were 70 patients waiting to be admitted to Essex County sanatoria and that since the war the figure had increased, and patients kept waiting two or three months, how many patients, both male and female, were at present waiting, what steps were taken to prevent the disease being spread by these patients, how many patients discharged themselves from Essex County sanatoria in 1940 before treatment was completed, and what steps were being taken to ensure an adequate number of beds in the county in future —Mr BROWN replied I am informed that at present 114 persons in all are on the waiting-list In many cases immediate admission is not required, but for those in which it is desirable every effort is made to secure sanatorium treatment as soon as possible The spread of the disease is controlled by the normal measures of supervision in the patient's home and by giving priority in admission to those whose segregation is desirable A certain number of patients discharge themselves from county sanatoria against medical advice before completion of the necessary sanatorium treatment, but I have no information as to the numbers concerned in 1940 An additional institution of 300 beds has been brought into use since the outbreak of war

More Pay for Service Nurses

In a written reply to Miss WARD, Captain MARGESSON, Secretary of State for War, announced the following improvements in the scale of pay of the nursing services, which take effect from April 1, 1941 —

The minimum rate of pay of a sister, Queen Alexandra's Imperial Military Nursing Service, is being increased from £80 to £95 a year, and sisters whose rates are below £95 will be brought up to that figure Annual increments of £5 a year for future approved service will be admissible as heretofore and the sister s maximum will remain £125 a year

For members of Queen Alexandra's Imperial Military Nursing Service Reserve the Territorial Army Nursing Service and the Territorial Army Nursing Service Reserve, the minimum rate will be £105 a year Members of these services who have civilian nursing experience will also be allowed certain special increments Increments of £5 a year on the scale for each year s approved military service rendered hereafter will also be admissible subject to the over all maximum of £125 a year

Similar increases have been made in the scale of pay of members of the R.A.F. nursing services

Food Examination and Public Health

Captain L F PLUGGE asked the Minister of Health whether any supervision was maintained over the component parts of such commodities as fish cakes, meat and potato pies, luncheon and breakfast sausage, meat rolls meat pies, egg dishes and other articles in which there was little content of the article advertised —Mr BROWN replied The Food and Drugs Act, 1938, gives wide powers for the sampling and examination of food, both for the protection of the purchaser and in the interests of public health These powers extend to the ingredients of any article of food whether on sale or in possession for the purpose of preparation for sale The administration of the Act rests with local authorities, and I have no reason to suppose that they are not maintaining adequate supervision.

Diet for Diabetics

In reply to a question Major LLOYD GEORGE stated that on the recommendation of the food rationing (special diets) advisory committee of the Medical Research Council, the Minister of Food had arranged for diabetics to receive two extra meat and two extra butter and margarine rations per week in lieu of their sugar ration.

Coalminers and Silicosis

In replying to a question Mr HERBERT MORRISON gave particulars of applications to the medical board for certificates, under the Various Industries (Silicosis) Schemes from Coalminers, 1940, as follows

—	Total number	South Wales, excluding anthracite mines	Anthracite mines
Disablement or Suspension—			
Applications for certificates	957	353	472
Certificates granted —			
(1) Total disablement	185	91	71
(2) Suspension (with partial incapacity)	282	78	189
Deaths—			
Applications for certificates	137	84	32
Certified as due to the disease	93	58	18

Notices in the Medical Press

Mr GROVES asked the First Lord of the Admiralty why the notice to civilian medical practitioners, called in to attend naval ratings, was only inserted in the *British Medical Journal* and the *Lancet*, when was the notice published, and what was paid to each paper —Mr A V ALEXANDER replied. I understand that most medical practitioners read one or other of these papers The notice was published on March 8 and no payment was made

Deaths from Tuberculosis

In reply to a question recently addressed to him, Mr E BROWN, Minister of Health, stated that the number of deaths from tuberculosis (all forms) registered in England and Wales for the second quarter of the year were -

Year	Males	Females	Total
1940	4027	3089	7116
1939	4027	2836	6863
1938	4150	2823	6973
1937	4256	3117	7373

Infectious Disease in England and Wales

WEEK ENDED APRIL 19

Notifications —The following cases of infectious disease were notified during the week smallpox, 0; scarlet fever, 1056, whooping-cough, 3568, diphtheria, 877; enteric fever 26, measles (excluding rubella), 13,951 pneumonia (primary or influenzal), 1156, puerperal pyrexia, 147, cerebrospinal fever, 326, poliomyelitis, 7; polio-encephalitis, 0; encephalitis lethargica 3; dysentery, 131, ophthalmia neonatorum, 78 No case of cholera, plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospitals of the London County Council on April 18 was 1760 including scarlet fever, 223 diphtheria, 368 measles, 391 whooping-cough, 338 enteritis 29 chicken pox, 86 erysipelas 50, mumps, 12 poliomyelitis 1 dysentery 30 cerebrospinal fever 60 puerperal sepsis 9, enteric fevers 8 German measles 8, encephalitis lethargica 1, other diseases (non infectious) 66, not yet diagnosed 80

Deaths —In 126 great towns there was no death from smallpox or scarlet fever, 1 (1) from enteric fever, 36 (0) from whooping-cough, 16 (0) from measles, 27 (1) from diphtheria, 28 (4) from diarrhœa and enteritis under 2 years, and 51 (6) from influenza The figures in parentheses are those for London itself

Bournemouth reported a fatal case of enteric fever Liverpool and Manchester each had 5 deaths from whooping-cough Liverpool also reported 7 deaths from diphtheria

The number of stillbirths notified during the week was 213 (corresponding to a rate of 41 per thousand total births), including 14 in London

recent papers is of extensive disease with large cavities and fibrosis which had been missed at the clinical examination In *another account 50% of the patients* with positive miniatures had tubercle bacilli in their sputum

(6) Mass radiography is more spectacular and, with its full commitments, more expensive but less reliable than mass examination of the sputum

For these reasons I would strongly deprecate the expenditure of public funds on mass radiography

Birmingham 15 JAMES F BRAILSFORD

ESERINE AND PROSTIGMIN

SIR,—An interesting series of experiments, reported in your issue of April 12, has led Denis Williams and Ritchie Russell to the conclusion that eserine diminishes epileptic activity whilst Prostigmin increases it This work is of considerable importance and I should therefore like to draw attention to a factor which may possibly have vitiated the results The anti-cholinesterase activity of these two drugs appears to be implicated If that is the case the use of these drugs in myasthenia gravis might give some indication of comparable relative dosage In that disease 0 5 mg of prostigmin gives results as good as or better than those obtained with 2 5 mg of eserine In their experiments, Williams and Russell have used chiefly 1 5 mg of prostigmin, which probably corresponds to 7 5 mg of eserine, whilst they used only 1–2 mg of eserine in most of their cases I suggest that, were they to repeat their observations with 0 5 mg of prostigmin, the result might well be a decrease in epileptic activity comparable to the action of the small doses of eserine they used

It is perhaps significant that two of the patients treated with eserine in doses sufficient to cause toxic symptoms (3 5 mg in a man and 1 5 mg in a boy of 13) showed an increase in epileptic activity This suggests surely that the action of eserine varies with dosage and may be reversed when larger quantities are used Conversely, I believe that prostigmin might, in smaller doses, give results opposite to those obtained so far with larger doses In two experiments Williams and Russell gave first 1 5 mg of eserine, producing a decrease of epileptic activity, and then injected 1 5 mg of prostigmin, altering the decrease to an increase I think that prostigmin 0 5 mg followed by eserine 1 5 mg might have had the same result

Finally I should like to mention the case of a myasthenic woman of 28 who had epileptiform convulsions for the first time whilst taking prostigmin 7 5 mg daily in divided doses As I did not suspect any connexion with her treatment, the injections were continued , the fits ceased after a few months and have not recurred, although she still takes prostigmin in the same doses

Park Prewett Hospital, Basingstoke L P E LAURENT

EXPERIENCES OF BLAST

SIR,—You may recall my account of the policeman who was blown some fifty yards by the explosion of a very heavy bomb (*Lancet*, April 5, 1941, p 461) He has survived, and his story is that he was trying to locate on or about a particular building an unexploded bomb which had been reported in the usual way He estimates that he cannot have been more than ten yards away from it when it went off The explosion burst one of his ear drums but there was neither clinical nor radiological evidence of any blast injury of the lungs

Another interesting blast " incident " was described by the man who experienced it A heavy bomb exploded about 200 yards away while he was walking in a moderately wide street He found himself lifted off his feet, and his chest felt as though it was being squeezed most painfully, so that " all the blood was being displaced to my head, making it throb badly " The effect was quite momentary

YOUR PERIPATETIC

Dr F R Humphreys asks on behalf of the Thunderstorm Census Organisation if readers would send him details of any cases of injury to human beings from lightning The information will only be used for statistical purposes by the organisation Dr Humphreys may be addressed at Langley Terrace, Oakes, Huddersfield

Parliament

IN the House of Commons on April 22, Mr JAMES GRIFFITHS raised the case of a young man named Thomas of Llanelly who was passed into the Army A1, though in 1930 he had had a mild attack of rheumatic fever After three days' service in the Army he broke down and after some months in hospital was discharged as unfit suffering from mitral stenosis Till he was called up Thomas had worked for nearly eight years as a grease burner, doing hard and strenuous work in front of a furnace with only a week and a half's sick leave for influenza On the advice of his medical advisers the Minister had decided that this young man's disability was not caused by his service in the Army or materially aggravated by it and he had received no pension Mr Griffiths said that if this case had happened in industry the man would have received compensation He urged the Minister to set up an independent tribunal to deal with these cases In reply Sir WALTER WOMERSLEY the Minister of Pensions, admitted that the Britisher gets some satisfaction from knowing that even though a tribunal is not a competent one he has had a hearing for his case, but in the present shortage of doctors it would be impossible to get the right men to serve In Thomas's case he found there was a difference of opinion between the man's own doctor and not only the Ministry's doctors but also the medical board who found that the man's condition was not aggravated by his service Therefore he submitted the case to a medical specialist nominated by the *Royal College of Physicians who had not though* it necessary to examine the man but after considering the medical evidence had reported that stenosis was caused by rheumatic fever in early life and that provided that the heart was little affected it might be present with little symptoms of heart disease and the patient might be able to live for years an ordinary life, even one involving manual labour On medical examination the signs of this disease might be overlooked When the characteristic murmur and thrill were well marked (as in Thomas's case) the valvular defect was probably of considerable standing He advised that the illness made the heart condition worse, but it was a case of worsening irrespective of the service the man had performed

Sir Walter Womersley said, at the beginning of the war many men who ought never to have been taken into the Forces were accepted But the examination was now much stricter , and he was pressing for an even stricter one Where men had failed to disclose previous illnesses there was some excuse for a doctor grading them as A1 But Mr Thomas on enlistment gave a history of rheumatic fever in childhood and yet was placed in Grade I That seemed to be one up against the doctor He did not believe that there was widespread trouble over these cases It was astounding to him how few they were, considering the rather slack examination in the early days

Sir Walter also emphasised the importance of " salvaging " the men who are discharged Many are able to return to civilian life and work, and as we pointed out *last week (p 543) rehabilitation is more than ever wise* and thrifty

LITTLE AND OFTEN

When the Budget resolutions came before the House of Commons on April 23 Sir GEORGE DAVIES pointed out the danger that heavy taxation on the wealthy classes would have a serious effect on the financial support given to great charitable institutions such as voluntary hospitals In reply Sir KINGSLEY WOOD admitted the burdens he had imposed but said he comforted himself with the reflection that the help which had saved so many hospitals did not come from large gifts of money by individuals, but from regular week-to-week contributions made by large sections of the community all over the country Much as he would regret the withdrawal of subscriptions to hospitals, he was therefore not unduly apprehensive

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In an answer to a question Mr BROWN said The number of deaths from cancer in England and Wales registered during 1939 are provisionally returned as 69 001 was not so the second time For one found there a compendium of knowledge a wealth of experience and, above all, a willingness to help, at whatever cost of time and trouble, the like of which could rarely be found anywhere, here or abroad It did not matter if the visitor were the veriest tyro humbly seeking an introduction to a particular technique or a senior of repute wishing to discuss some intricacy of public-health bacteriology all came away impressed and hoping to return Few public-health bacteriologists in the British Isles do not owe to Griffith and Scott gratitude for help received, some of it acknowledged here and there as a footnote to a paper yet more unexpressed but living in the thousand and one details of their daily work The Ministry of Health may have failed to provide the country with an impressive laboratory or, in peace-time, with an adequate laboratory service, but it did provide two men with an opportunity, which they gladly seized, to help their colleagues in humbler spheres up and down the country And many of these colleagues will hope, as I do, that in the future there will rise an institution worthy of their memory —H D W

DUDLEY MACAULAY STONE

M.R C S

St Bartholomew's Hospital loses a devoted son and one of its premier radiologists in Dudley Stone, whose death occurred on April 15 He was always keen on photography, even as a student, and a number of photographs of members of the staff have been preserved as the result of his activities He first became interested in radiology when house-surgeon at the Metropolitan Hospital in 1912, in the following year he was clinical assistant in the X-ray department at St Bart's and had just gone on to Victoria Park Hospital when war broke out and he joined Gordon-Watson on the staff of the Duchess of Westminster's Hospital with which he remained for the duration On his return he became a chief assistant and ultimately medical officer to the X ray department at St Bart's For some time he was also in charge of the clinical photography department Beside chest radiography he worked on the X-ray diagnosis of facial lesions with Gillies and of the skull with Cairns As was then customary he also carried out radiotherapy

Stone had a very kindly personality, he was never ruffled and his cheerful demeanour was a help to his patients As a boy he developed a love of the sea and of sailing and this was always the chief of his many hobbies With a friend he rebuilt an old lifeboat, which subsequently weathered many storms Later he was part-owner of the *Silver Crescent* and in 1912 was detained with the rest of her crew in the Kiel Canal on a charge of espionage He was good at many games, but especially at rugger and at water-polo Having overstrained his heart at the latter he occupied his period of recovery with voyages round the world Afterwards he designed a boat with an ingenious engine control and a larger model was used in the evacuation of Dunkirk He was a very keen philatelist and won high awards for his Falkland Islands collection For many years too he was chairman of the St Bart's Catering Company

WILLIAM BRADFORD FOSTER

M B LOND, CAPTAIN, R A M C

Captain W B Foster, who died on April 15 at the Middlesex Hospital, was born in San Francisco in 1913, the son of Mr W D Foster He was educated at St George's College, Addleston, and at Cranleigh School, Surrey He qualified M R C S from St Bartholomew's Hospital in 1937 and was soon appointed to a resident post at Worthing Hospital A year later, while acting as senior resident surgical officer at the Kent and Canterbury Hospital, he took his London M B He later became assistant medical officer at the Battle Hospital, Reading and early in 1939 he joined the R A M C But when war broke out he was unable to go abroad for he had been involved in a motor accident in which he had sustained severe concussion All through his long and trying illness he studied whenever possible, for he was determined to work for higher qualifications Captain Foster married in 1938, Anne Griffith-Jones of Criccieth, who survives him with a young son

JAMES GRAHAM FORBES

M D CAMB, F R C P, D P H

Dr J G Forbes died in the Kent and Sussex Hospital at Tunbridge Wells on April 8 His passing will be mourned by a large circle of the older members of the public health service, especially in London who knew and respected his sterling qualities and lifelong devotion to duty

Elliott & Fry

His father and grandfather were both clergymen of the Church of England, the latter being British chaplain in Paris He was born at Clevedon, Somerset, and went to Clifton College After a distinguished academic career at Christ's College, Cambridge, and St Bartholomew's Hospital, he qualified in 1898 and became house physician to that breaker of graven images, Samuel Gee On leaving hospital he turned to pathology for which his training and scientific attitude of mind had prepared him His chief interest was the origin of disease in childhood and he went as clinical pathologist to Gt Ormond Street But when the sphere of public health was widened by the establishment of the school medical service Forbes was attracted to it, and he joined the public health department of the London County Council He worked in 1911 as one of a small band of whole-time assistants under Menzies in the schools of the East End, and when shortly afterwards the divisional system was established throughout London he was promoted to the charge of the South-East division, which is the largest in London But his heart was still in pathology, and although not unsuccessful as an administrator he seized the opportunity, when the new County Hall was opened with its well-equipped laboratories, to combine the two sides of his work He joined Brincker at headquarters and was from that time until his retirement engaged in bacteriological work combined with control of infectious diseases in the schools, holding the rank of principal assistant medical officer He was an early and ardent supporter of the scientific control of diphtheria by preventive inoculation His sense of duty and missionary zeal in this sphere caused him in 1932 to expand his Milroy lectures of 1929 into a monumental study of the whole subject, and to publish it at considerable cost to himself As regards prevention, at least it is almost literally accurate to say that the survey extended from China to Peru He also carried out a number of original pathological researches, including the study of the floras of school swimming baths, of elementary school class-rooms and of the Underground electric railway

Some fifteen years before his retirement Forbes underwent a severe operation for gastric trouble which left him more or less of an invalid He faced his end with the same stoical fortitude which he had shown throughout his life His sense of the dignity of the profession was very high and never by word or by deed did he deviate by a hair's breadth from the stern path of duty which he had from his student days set before himself

Dr Forbes married in 1905 Muriel Watson, daughter of Dr Watson Paul of Cowes, and leaves a son and two daughters

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ANETHAINE brand of butethanol, a substance chemically allied to procaine, is now manufactured by Glaxo Laboratories It is ten times more powerful than cocaine, so that a solution of one-tenth the concentration may be used And in this dilution Anethaine has a lower toxicity than cocaine It produces effective surface anæsthesia for operative procedures on the eye nose and throat, and for relief of painful conditions in accessible parts of the body covered with mucous membrane It is presented as a 2% solution (coloured blue) in 25 c cm bottles, and as powder in 1 and 5 g bottles

Obituary

WILLIAM McDONALD SCOTT

M D , B SC EDIN , D T M & H

THE death by enemy action of Dr W M Scott, senior medical officer at the Ministry of Health, is an irreparable loss to British bacteriology and to workers in epidemiology and preventive medicine With him died his friend and colleague, Dr F Griffith

William McDonald Scott was born in Nyasaland in 1884 of Scots parents, and educated at Dumfries Academy and the University of Edinburgh, where he graduated with first-class honours in 1905 In the following year he took the diploma of tropical medicine and hygiene, and as McCunn scholar carried out research work on the conditions affecting the persistence of the typhoid bacillus in contaminated soil in Edinburgh and later in Munich From 1908–10 he worked as Carnegie scholar at the Royal College of Physicians of Edinburgh on the identification of bacterial species by serological methods, a subject on which he was later to become an acknowledged master This work led him to study the mechanism of the anaphylactic reaction, and his experiments on this phenomenon furnished its correct explanation The next two years he spent at Cambridge and at the Pasteur Institute, where he worked with Professor Besredka on the behaviour of trypanosomes in immunity reactions After sixteen months as government pathologist to the Straits Settlements, he returned to Cambridge in 1913 to teach bacteriology In 1914 he became medical officer of health to the North-East Kent United Districts, and in 1915 he collaborated with the bacteriologists of the Local Government Board Laboratory in an investigation into the mode of spread of cerebrospinal fever In 1917 he was appointed to the permanent staff of this laboratory, which became in 1919 the pathological laboratory of the Ministry of Health

From 1917 till his death Scott carried out bacteriological investigations on a great variety of public-health problems, but he will best be remembered for his work on the salmonella and dysentery groups of bacteria, a province which he made peculiarly his own He was an official and unofficial court of appeal on the technique and interpretation in laboratory testing of water and sewage, and helped in the preparation of the memorandum issued by the Ministry on the bacteriological examination of water-supplies, in which a standard method of bacteriological testing of water was proposed He was a member of the preventive medicine committee of the Medical Research Council, the nomenclature committee of the International Association for Microbiology, and he served on the technical committee of the British Standards Institution on scientific glass-ware

He leaves a widow, four daughters and three sons, his eldest son is serving abroad with the R A M C

V D A writes Painstaking and accurate in his methods, resourceful and original in planning experiments, none of Scott's findings has ever been called in question He had a dry wit, a keen sense of humour and an easy pen, and his writings are models of lucidity and clear thinking Cool and clear in judgment, his opinions always commanded respect, and, most unassuming of men, he had the gift of making and keeping friends His promotion to senior medical officer in the newly created laboratory division of the Ministry of Health a week before his death was a well-deserved recognition of his services to bacteriology and public health in the department which he had done so much to build up

FREDERICK GRIFFITH

M B LPOOL, D P H

Dr F Griffith, who was Scott's fellow at the Ministry and met his death with him, was born at Hale in Cheshire some sixty years ago He graduated from the University of Liverpool in 1901 and after holding resident Liverpool Royal Infirmary he was awarded the ander fellowship in pathology and worked at the son Yates laboratory Later he joined as an gator the Royal Commission on Tuberculosis at Stansted where his brother, the late A Stanley Griffith, was also working In 1910 Griffith joined the staff of the Local Government Board under Dr Arthur Eastwood and began work at Cardinal Manning's old house in Carlisle Place, and like Scott he moved to Dudley House when the Ministry of Health took over the service Since the outbreak of this war he had been working for the Ministry and the Medical Research Council on investigating streptococci isolated from war wounds and other sources

Like his brother he was a recluse, known to few To these, however, his quiet, kindly manner and his devotion to his life job, made him a lovable personality Outside his work he found his pleasure in his winter ski ing holiday in the Alps, in walks with his dog on the Sussex downs, and in the cottage he had built there He was a member of the honourable society of Gray's Inn

For over thirty years of his working life, writes L C, Fred Griffith followed a single star He believed that progress in the epidemiology of infectious diseases would come—and only come—with more precise knowledge about the micro-organisms responsible for those diseases It was idle to speculate about the sources of infection in tuberculosis or streptococcal infection while there were manifest differences among the strains of tubercle bacilli and of streptococci Better differentiation of the organisms must come first, and to that task he devoted his life, content quietly to amass observations year after year in the sure hope that some pattern would gradually emerge Some of us wondered—I certainly often did—whether such complete preoccupation with this one aspect of the problem was worth while But Griffith was right, as events have proved His differentiation of the hæmolytic streptococci into types by the agglutination reaction, and that of Mrs Lancefield into larger groups by the precipitin reaction, have enabled workers all over the world to dig out the essential facts about the sources of infection in scarlet fever, puerperal fever, epidemic sore-throat, surgical sepsis and wound infections These facts are providing the foundation for far-reaching preventive measures Griffith knew well that the task was by no means completed but his work had carried it farther than that of any other single individual A fine achievement, carried through without thought of personal ambition or of gain He also worked alone at the differentiation of the meningococci and the pneumococci and staphylococci, and here two pieces of work stand out that on the profound biological changes induced in a virulent pneumococcu by contact with an immune serum, and that on the transformation of pneumococcal types under certain circumstances It was characteristic that he hesitated longer than most workers would have done before publishing these observations He always took the line "Almighty God is in no hurry—why should I be?"

A FITTING MEMORIAL

A foreigner, visiting for the first time the laboratory of the Ministry of Health in London, must have been little short of appalled to see how meanly this fundamental activity of a great department of a wealthy country was housed, and must have wondered how, thu cabined and confined, these two world-famed worker managed to exist, let alone function, in such a chaotic environment But he would not be long there befor he knew that they did so because they were Scott and Griffith, who, like C J Martin, could do more with a kerosene tin and a primus stove than most men could do with a palace And if one hesitated to pay the first visit, seeing that it was to a government department it

Notes, Comments and Abstracts

NEW SCOPE FOR THE ALMONER[1]

BY MARGARET W EDMINSON

ALMONER TO THE PETO PLACE CLINIC FOR RHEUMATISM

HOSPITAL almoners have been in existence since 1895, and most of our present working almoners were not born when Miss Mary Stewart was first appointed to the Royal Free Hospital Sir Charles Loch, secretary of the Charity Organisation Society, was founder of the profession It was he who first recognised as early as 1885 the need for some kind of social service within the hospitals The problem confronting the governing boards of the hospitals was at that time an administrative one connected with the overcrowding of the outpatient departments Sir Charles was convinced that trained social workers should be appointed to provide a link between the treatment that was given in the outpatient department and the outside sources of medical and social aid When Miss Stewart, as a result of his representations to the governing board of the Royal Free, was appointed the first almoner the three main duties laid down for her were to prevent abuse of the hospital by persons able to pay for medical treatment, to refer patients already in receipt of parish relief and such as are destitute to the Poor Law authorities, and to recommend suitable persons to join provident dispensaries

It would be interesting to know how far the hospital committee (whose initial motive in appointing Miss Stewart was to keep down numbers) realised the significance of the duties they assigned to the newcomer Some must have been influenced by the ideas of Sir Charles Loch, for the minutes of the board contained an additional statement "that we have no machinery by which cases of needy and deserving patients can be followed up after treatment It must frequently happen that a few weeks change and rest with good food at the seaside or country would save a valuable life, and there are various societies willing to help such cases, if their attention is drawn to them" There, surely, was the idea of medical social service, but hidden, as a negative statement, in the minute book During the following ten years seven other hospital boards followed the example set by the Royal Free Hospital, and in 1903 the eight pioneer almoners joined together in a small committee "to discuss the possibilities and difficulties of their work" I like to think of that small group meeting round the fireside in their own homes and thrashing out the groundwork of the present Hospital Almoners' Association

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The 1913 report of the almoners department of the Royal Free mentions 488 patients sent to convalescent homes, 108 supplied with surgical appliances and 54 helped with other forms of relief such as clothing and "cabfares" The board could no longer regret that they had "no machinery" for aftercare, for arranging convalescence, or providing extra nourishment and surgical boots and belts This report, like others of the same period, is a milestone for it deals with the effects of the new *National* Health Insurance Act on hospital administration and shows how the almoner became at once the interpreter of the scheme Where difficulties confronted the patients who wished to claim benefits or where there was ignorance as to the benefits to which they were entitled, she advised In all cases where an insured patient was found not to require hospital treatment, directions as to how to use the services of a panel doctor were given to those who were not already on a panel doctor's list The governing bodies of hospitals also decided that the almoners were the proper officers to administer Samaritan funds Hospital policy was formulated on statistics supplied by the almoner concerning insured persons, members of approved societies and matters relating to public authorities, and many almoners, by their knowledge of funds available outside the hospital, were able to save Samaritan funds from being burdened by unnecessary inroads There is a triumphant year in the annals of St Thomas's at about this time when the Samaritan fund was free of debt, for, as the almoner reported, "during the year many approved societies paid the whole cost of convalescence and instruments for the members, a source of help practically unknown before"

In 1914 it was feared that the effect of war on hospital finance might lessen the number of appointments, curtail posts already in existence and bring an end to our struggling youth Actually the work of the departments, in spite of reduced number of patients, did not decrease, there was a dearth of almoners to carry on, and a lack of applications from students for training The various war pensions committees and soldiers and sailors families' associations, called into being at that time, increased the importance of record keeping and accurate case work The almoner was also doing valuable work in maternity and child welfare departments organising home visiting and helping to raise the standards of personal hygiene and cleanliness in the homes of those who applied to the hospitals for their confinements Children's care committees were being formed at this time, and an interchange of social and medical reports between care committee workers and almoners resulted in effective care of each individual child There was similar close cooperation between tuberculosis officers, health visitors and almoners in tuberculosis hospitals One would have expected to see a similar increase in the work done in V D departments, but even now there is reluctance to call in the help of a social service worker in these clinics The possibilities there are such that one wonders why progress in this direction has been so slow

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After the war some hospitals appointed almoners to help to increase the financial income of the hospital, and many of those appointed felt heartburnings because they realised that work of this kind was a side issue of their main function They felt they were not really called to stop abuse or to collect payments, they were called to serve the patients and to cooperate in the fight against disease, and it is interesting to note that, once appointed, these almoners gave alongside their administrative work, the benefits of their social service experience until the true value of their team work in the cure and prevention of disease was fully recognised

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Now the pages of the scrap book turn to 1939 From the point of view of a London almoner the months following September were black Wholesale evacuation took place, doctors, patients and hospitals were scattered, organisations left London, departments closed down, chronic and incurable and mentally unstable patients were removed to outlying districts, or sent home to sometimes utterly unsuitable circumstances, patients suffering from tuberculous conditions (actively infectious) were discharged from hospitals to overcrowded homes, patients with early and operable carcinoma were unable to gain admission, children requiring regular supervision month by month in orthopædic departments were evacuated to districts where no orthopædic service existed, others suffering with open sores were billeted in the homes of healthy families Many almoners were thrown out of work and many of us were challenged by the thought "How had medical social service failed so that at this supreme *crisis in the nation's* history no single almoner had been invited to help to plan for the emergency that for months previously had been foreseen by the Government?" Those who retained their jobs strove hard to alleviate the suffering of the patients by whatever means they could devise, and gradually as the months passed and London was not attacked, and as the Emergency Medical Service came slowly and painfully into gear, the profession seemed to emerge from that first shock and to get to grips with the problems

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At the beginning of the war there were about 50 almoners out of work—now there are practically none The pendulum has swung from left to right We are witnessing in London a revolution in our work For instance, the head almoner of a large voluntary hospital finds her assistants transferred as almoners to base

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[1] Extracts from an address delivered at the annual meeting of hospital almoners on April 2

Medical News

University of Cambridge

On April 26 degrees of M B , B Chir were conferred by proxy on F S Jackson and T W Rowntree

The late Dr Charles Slater has left £4000 to the university for teaching or research work in medical science or any science ancillary to medicine at the discretion of the university

University of London

At recent examinations the following were successful —

D P M

Helen Baker (with mental diseases psychiatry)
Part A —J W Affleck, A A G Clarke, Portia G Holman, and Barbara E Woodhead

University of Wales

At a recent examination for the Diploma in Public Health Dr Nancy G Rogers was successful in the second part

Royal College of Physicians of London

At a meeting of the college on April 24, with Sir Charles Wilson, the president, in the chair, the following were elected fellows —

Stanley Wyard, M D Lond (London) John Inkster, M D Aberd (Middlesbrough), J B Alexander, M D Glasg (London), H S Pemberton, M B Lpool (Liverpool), E G B Calvert, M D Belf (London), A W Hendry, M D Aberd (Aberdeen), Montague Maizels, M D Lond (Maidstone), T H Crozier, M D Belf (Belfast), F A Knott, M D Lond (London), C J Fuller, D M Oxfd (Exeter), C J Polson, M D Birm (Leeds), Robert Klaber, M D Lond (Bishop s Stortford), J G E Hayden, M B Melb (Melbourne), R M B Mackenna, M D Camb (Liverpool), C P Pinckney, M B Camb (London), S P Meadows, M D Lond (London), Andrew Morland, M D Lond (London), F F Hellier, M D Lond (Leeds), L P Laurent, M D Lond (Basingstoke), Thomas Tennent, M D Glasg (Northampton), J G Scadding, M D Lond (London), N S Plummer, M D Lond (Steyning), R W Fairbrother, M D Manc (Wilmslow), Evan Jones M D Lond (London), E H Hudson, M B Camb (London), M L Rosenheim, M D Camb (London), Samuel Nevin, M D Belf (London), G W Goodhart, M D Camb (London), G N Myers, M D Durh (Cambridge), E F Scowen, M D Lond (London), A E Barclay, D M Oxfd (Oxford), J F Brailsford, M D Birm (Birmingham), R M Gordon, M D Dubl (Liverpool), N G Harris, M D Lond (London), G C Anderson, M D Edin (London), G R Cameron, M B Melb (London), Egbert Morland, M B Lond F R C S (Aylesbury), and Major General H Marrian Perry, L R C P I (London)

The following having satisfied the censors' board were admitted members —

H J Anderson, M B Camb , D W R Ashby, M B Lond , C R Baxter, M B St And , H W Fullerton M B Aberd , Lilias M P Gairdner, M B Lond , I M Hall, M B Lond , M R Hayes, L R C P , F R G Heaf, M D Camb , C J C G Hodson, M B Lond , A L Jackson M B Camb , B A E Johns, M B Birm , T A Kemp M B Camb , A A G Lewis, M B Lond , R C Mackeith, D M Oxfd , Maurice, Nellen, M B Cape Town , J W Paulley, M B Lond , R A F M S , John Pemberton, M D Lond , J L Pinniger, B M Oxfd , Mohammed, Sadiq, M B Punjab , D B Sen, M B Calcutta , J R Squire M B Camb , Euodia D Van Der Walt, M B Cape Town , A J Walker, M B Lond

Licences to practise were conferred upon the following 171 candidates (157 men and 14 women) who have passed the final examination of the conjoint board —

P H Abbott G C Acres, R A Allen, M W Annear, Norah H R Armstrong, L Faibes Barasi, R F G Barker, J S Barr, J L Battle, J W , Battram, C L F Beaton R C Bell, Wallace Black, P H Blackiston, D V V Bowen Jones, K G Bowker, A C Boyle, W Ll Brace, K T Brown, J E Bulow, H C Burbidge, H C Burnell, I C Campbell, L S Carstairs, Joan Cleland, Betty J Clymo, R C Connolly, P B Conroy, Horacio Conte Mendoza, C F Cooper, W H Craike, R McK Crichton, J H Crosland, P S Cuthbertson, Raymond Daley, P G Dalgleish, G J L Davies, H McI Davies, B W Davy Thomas Dean, R M de Gregory, W P Dick, R G Dickinson, C F Donovan, O B B Downman, C H Dunn, J R G Edwards, Margaret Edwards, J J Elkesas, Basil Ellenbogen, Franz Fessler, Edmund Finsterbusch, Elizabeth H Flett, L P R Fourman H D Freeth, Bela Galandauer R M Galvan L A Gibbons, N W Gill, Kathleen M Gillett, Norbert Glas N F C Gowing, E A Grau, Caleb Greenwood Penny, K E A U Ground, T E Hall, R C Hallam, G J Hardaker, D H C Harland, Stanley Harrison, H G Helm, G W D Henderson, R S Henderson, P R Henson, Ebbie Hesselberg, R D Hoare, Alan Holmes Smith, Herbert Howard Swaffield, H B Hyman, J B Ingram C J R Jacob, H M Jones H H Khan, R A B Kinloch, H G S Korvin, W S S Ladell S E Large, J B Latto, R R Latto, T E Lamb Brian Lees, E J Leighton H M Lewis, D M N Longridge, T H McCall, J G McGavin, Lydia McMurdo, F R L Makin, C N S Manson J K Martin, L G C Martin, Margaret E Matthews, J Le F Milburn, P J Miller, R A Moir, B P Moore, D B Morgan, A B Morrison, A R V Moynagh, A B S Mules, A T L Norfolk, N C Norman, J A Oddie, Thora A M Oehlers, K R Ogilvie, L J Page, K H J B Parker, T P Pattinson, R H Percival, C M C Potter, Dorothy P Potter, B S Powell, G C Price, G C Purslow, P A B Raffle, R I Randall, Douglas Ranger Joseph Reiss Leslie Rendell Baker, J L Roberts, T M C Roberts, P J Robinson W J B Rogers M S Ross, Basil Rowlatt, F R Russell H B L Russell, J A Sadler, R G Saipe, R P G Sandon, R D W Schofield, Raphael Sepson, P C Sharma, R M Sharpe, K N Sinha P A J Smith, R A G Smith, T H S Smith C C Spicer Walter Spitzer J S Stead, D E S Steele, Harold Sterndale S J Sutton, J H Thompson Edith M Thorp, J S Tomkinson, S E Vincent, J W Warburton, R S Wathes, N D Wayne C M Weddell D N White, White, G L Whitmore, D M Wilkins Betty M Williams, John Williams, M H Wostenholm, G B Wright, and R B Wright.

Diplomas in child health were granted to the candidate named in the report of a meeting of the Royal College c Surgeons in our issue of April 26 (p 556)

Surgeon Vice Admiral Sir Reginald Bond was re elect representative on the Professional Classes Aid Council D G E Ward was appointed external examiner in medicin for the fellowship examination of the Faculty of Radiologist

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Dr A W L Smith of Sharston, Manchester, has bee nominated as an independent candidate in the by election King's Norton, Birmingham Polling will take place May 8

On Tuesday, May 13, at 3 P M , at the section of therapeuti and pharmacology of the Royal Society of Medicine, Pro J A Gunn will deliver the W E Dixon lecture He wi speak on the future of pharmacology

Lord Bessborough has been elected president of the Roy Sanitary Institute in succession to Lord Balfour of Burleig whose period of office has expired

The Harveian lecture for 1941 will be delivered by D John Taylor to the Harveian Society of London on Monda May 5, at 2 30 P M , at 26, Portland Place, London, W His subject will be The coroner, the doctor, and the public

Dr K W C Sinclair-Loutit, medical officer to Finsbury A R P casualty service, has been appointed M B E , and t George medal has been awarded to Dr H R B Norma resident assistant physician at St Thomas's Hospital

The annual meeting of the Cardiac Society of Great Brita and Ireland was held at Oxford on April 18 under the chai manship of Dr A G Gibson Dr J B Herrick (Chicag and Mr Frank N Wilson (Ann Arbor) were elected honora members, in addition to Dr Paul White (Boston), elected 1938 Books and records of William Harvey were on vie at Merton College At the morning session there was debate on the early signs of cardiovascular disease In t afternoon the treatment of coronary thrombosis was discusse especially the period of rest in bed and diet Original co munications, as arranged by the hon secretary, Dr Mauri Campbell, included the right pectoral electrocardiogram auricular fibrillation, the collateral circulation in coarctati of the aorta, the hæmic factor in angina pectoris, the electr cardiogram of the Stokes Adams attack, and a criticism of t term " chronic myocarditis "

According to the *African World* of Feb 19 Mr J H Ho meyr, minister of education for South Africa, has announce that the expansion of non-European hospital accommodati on the Witwatersrand has made it possible to offer faciliti there for full medical and dental training to non Europe students In the past these students could not proce further than the end of their third year at the Witwatersra University as the teaching hospitals did not permit conta between non-European students and European patient This concession is a sequel to the work of the committ appointed in 1937 to investigate and report on medic training in South Africa

Steady progress in the fight against disease is being achiev among the Western Pacific Islands by native medical pract tioners trained at the Central Medical School, Suva, Fiji, a it is hoped that the school will become the recognised medic training centre for the Pacific Islands Founded by t government of Fiji as an integral part of the native medic practitioner service, it became the central medical school 1928 when it was enlarged and extended with help from t government of Fiji and the International Health Divisio of the Rockefeller Foundation Students come to the scho from Fiji, Western Samoa, the British Solomon Island the Gilbert and Ellice Islands, Nauru, Tonga, the Coo Islands, the Rotuma Dependency, the Anglo French Co dominium of the New Hebrides, and American Samoa It hoped to bring Pitcairn Island within the scope of the school activities The course of training extends over four year and graduates receive a diploma which entitles them t practise medicine and surgery only in these territories Th school seeks to preserve the native character of its graduat in order that they may be more readily accepted in the nati social system All the students live at a hostel which accom modates 40 undergraduates Postgraduate courses are al held at the school

ORIGINAL ARTICLES

APPARENTLY TRIVIAL HEAD INJURIES

BY

WYLIE McKISSOCK,
M.S. LOND., F.R.C.S.
NEUROLOGICAL SURGEON TO AN EMERGENCY HOSPITAL, E.M.S.

BRIAN BROWNSCOMBE,
M.B. LOND.
SURGICAL ASSISTANT TO THE NEUROSURGICAL UNIT AT THE HOSPITAL

A PRELIMINARY survey of cases of head injury admitted during 1939–40 to an E M S Hospital has revealed many points of interest and one group of apparently trivial injuries demonstrated the need for careful investigation and treatment The group consisted of 53 cases with the following features all the patients were said to have had a period of unconsciousness after the injury, most of them had sustained scalp wounds, and in none was there clinical or radiological evidence of fracture of the skull In most cases it was not possible to learn the nature of the blow Many of the patients had no memory of the way in which the injury was received, and others had been injured partly by flying fragments and partly by being driven against some hard object

Most of the cases reached this hospital within 48–72 hours of injury and in the course of routine evacuation from hospitals in or near London They were not specifically referred to the head-injury centre, and it may therefore be concluded that the patients were believed to have sustained minor injuries only and were not regarded as in need of special investigation or treatment

Of the 53 cases, 27 had been operated on elsewhere before admission, 9 had had no operative treatment, while 11 had no external wound Of the 27 cases operated on elsewhere—by different surgeons in various institutions—there was primary healing in 2 only The reasons for these imperfect results were revealed by the appearance of the wounds at the time of admission Many had retained foreign bodies, few had complete excision of dead tissue round the wound, and in almost all no more than an inch of scalp had been shaved round the wound In all cases the wound had been closed with but one layer of widely separated sutures The suturing material was fishing gut in most cases, catgut in a few and silk in one only In many cases there was considerable tension on the stitches with resulting swelling, œdema and hæmorrhage of the scalp At the time of admission, or shortly afterwards, all the wounds were discharging pus

It would be unfair to comment too critically on these results, having in mind the circumstances in which treatment may have had to be carried out, but it may be emphasised that the necessity for urgent excision is not so great with head wounds as it is said to be with wounds in other parts of the body, particularly when the intracranial contents are involved Most cases of the kind, without suffering harm from the delay, can well be dealt with by a first-aid dressing and transferred some hours later to special centres where there are facilities for more complete investigation and treatment

PRELIMINARY TREATMENT AND EXAMINATION

At this hospital each patient, whether his injury appears slight or serious, is put to bed, kept warm, given fluids and relieved from pain and restlessness when these are present by the hypodermic administration of codeine phosphate or soluble phenobarbitone in appropriate dosage In the more seriously injured patients intravenous saline or serum has sometimes been found necessary to combat the shock which, although so often present, is too rarely noticed In cases admitted directly to the special head centre this form of treatment is normally continued for the first 24 hours after the injury, when a thorough neurological examination is carried out Since the abnormal physical signs in these cases are comparatively slight, their presence is confirmed by a second observer before they are recorded and their disappearance by the time of the patient s discharge from hospital is the criterion by which their relation to the injury is presumed The information thus gained is supplemented by a complete radiological examination of the skull and by lumbar puncture and examination of the cerebrospinal fluid and its pressure On these facts it becomes possible to assess the nature and gravity of the injury and to determine the line of treatment to be followed

Clinical examination revealed abnormal physical signs in 29 of the 53 cases, an abnormally raised or lowered intracranial pressure (as measured by lumbar puncture) in 19 and the presence of blood in the cerebrospinal fluid in 16 No less than 41 (77%) showed evidence of physical signs in the central nervous system

Clinical findings—In the two groups—those with abnormal changes in the cerebrospinal fluid and those without—the clinical findings did not differ materially *Pupillary changes* included inequality of the pupils (15 cases) and abnormalities of pupillary form and reflex activity, 6 cases showed definite nystagmus or nystagmoid jerkings to one or both sides *Motor changes:* 1 case had a hemiplegia with diminished deep reflexes, 1 a brachial and facial paresis on the same side; both of these were found to have a subdural hæmatoma and recovered after this had been evacuated through burrholes in the skull Another patient showed slight paresis of one leg without reflex changes *Reflex changes:* in 2 cases the abdominal reflexes were bilaterally abolished and in 1 the tendon jerks were lost in both lower limbs *Mental changes* were present in 7 cases, evidenced by disorientation, inability to concentrate, irritability, lack of insight All these abnormal signs had disappeared before discharge from hospital, which points to the determining rôle of the craniocerebral injury in their production

Case	Age	Sex	C S F pressure	Red cells in C S F (per c mm.)	Wound of scalp
1	21	M	220	0	–
2	20	M	190	0	–
3	17	M	200	0	–
4	30	F	200	0	–
5	24	M	180	0	+
6	34	M	185	0	+
7	30	M	230	0	+
8	25	M	210	0	+
9	43	M	250	0	+
10	71	M	70	0	+
11	31	M	140	144	+
12	30	F	220	+ + + 1st count 25 600	+
13	70	F	150	few	+
14	53	F	260	0	+
15	67	M	200	+ + + 1st count 7220	+
16	47	M	170	3040	+
17	46	M	200	80	+
18	62	M	215	314	+
19	16	F	225	2 present at repeated punctures	+
20	78	M	160	2490	+
21	36	F	225	+ + 1st count, 316	+
22	52	M	90	970	+
23	68	F	130	+ + + 1st count, 16,400	+
24	31	F	200	3 present at repeated punctures	+
25	23	F	410	650	+
26	23	M	110	30	+
27	60	F	120	24	–

Cerebrospinal fluid—In 27 cases (over 50%) there was abnormal intracranial pressure, or blood in the fluid. There was no constant relationship between abnormal clinical signs and the state and pressure of the fluid; abnormal physical signs were present in 15 cases with fluid abnormalities, and in 14 cases in which the fluid and its pressure were normal (see table)

It has been said that an œdematous brain firmly pressed against the overlying membranes as a result of a raised intracranial pressure may make bleeding from small vessels on the brain surface impossible, and that to lower a raised intracranial pressure by the withdrawal of cerebrospinal fluid is to risk an increase or a recrudescence of bleeding The graphs give the red-cell count in the fluid at each puncture, together with the pressure noted at the time in 6 cases, they afford no support to this view and even suggest that a low pressure may reduce the degree of bleeding Another view is that withdrawal of bloodstained cerebrospinal fluid when there is intracranial bleeding helps to prevent the blocking of the arachnoid villi by red cells and thus encourages the normal absorption of the fluid by these channels Alternatively, it has been suggested that the amount of blood removed by lumbar puncture is so small as to be of relatively little use in this way Whatever the truth about this, there can be no doubt that repeated lumbar puncture reduces headache, and in the cases here reported the relief obtained in this way and the hospitals in the home counties They share their patients, they share their problems and they share their records No longer must the almoner think in terms of a single unit, but in terms of a region She no longer only serves her local district, but she serves her sector At the end of 1939 the Ministry of Health notified all hospital authorities responsible for administering the Emergency Medical Service scheme that arrangements should be made for the appointment of an almoner, and that the Minister would be prepared to recognise the salary of an almoner as properly incurred under the emergency scheme There was not a very large response to this circular at first Quite a number of for instance the county council authorities had their own officer for collecting payments, but in several cases an almoner was appointed for administrative reasons

* * *

When, in the summer of 1940, the bombing of London began, there was a second evacuation and all the problems associated with large groups of homeless people called for immediate attention The situation now arose when the parent hospital overnight received perhaps 50 civilian air-raid casualties and, in anticipation of further numbers during the next night, sent 30 or so of these by motor convoy to a base hospital next day Some of these had only the clothes they stood up in, and had no homes to return to Some had lost children or husbands and did not know whether these were alive or dead Others had had their means of livelihood destroyed These arrived at the base hospital with varying degrees of injury and a host of unresolved social problems Within less than four months from the date when the "blitz" started, the Minister of Health circulated a clear and strongly worded letter to all the authorities in charge of Emergency Medical Service hospitals advising at once the employment of trained almoners for social service reasons This letter was, in my opinion, the most important milestone in our story The idea that was in the mind of Sir Charles Loch, and incorporated in 1895 as a negative statement in the minute books of the Royal Free Hospital, had at last come to fulfilment, last year the social welfare and after-care of patients was recognised as the essential reason for the appointment of trained almoners in all hospitals by the Government authority responsible for the health of the nation

As a result of this circular, there has been a great increase of almoners' posts in many counties The speed with which at the moment vacancies in new posts are developing might almost be called alarming Last year 30 new posts were filled, in the first ten weeks of this year 21 new vacancies have occurred, and at this rate (which, if constant, would be over 100 a year) one wonders whether the amazing opportunity with which we are faced can possibly be met Some of these new posts are of outstanding responsibility The chief medical officer of health and chief public assistance officer of one county have appointed an almoner who is to be responsible for the whole county This is significant Surely the regional medical officer, and the sector officer and the sector matron, should be joined by a sector almoner The country now is growing regionally minded, and we must not lag behind Could we, to take up one challenge, develop within the next five years a standardisation of our records? So that when the Ministry of Health of 1946 calls on us to produce material from social service departments in half a dozen sectors on certain factors relating to a particular disease, we could at once be in a position to compile and produce results Having become regionally minded, can we meet the widespread need to supply almoners of quality and in quantity? The Institute has resisted the temptation to increase numbers of students by lowering and shortening the standards of training, for it is realised that the quality of our work is of major importance We want almoners with good brains and of high courage and above all, those who are aware of human frailties and able to understand personal difficulties and relationships It may be that sacrifices will be demanded of heads of departments to free assistants to move on to key positions and that personal wishes will have to give way before professional claims For if we fail now, shall we ever have such a chance again?

Appointments

BARNES, FRANCES M M B Lond temp M O (maternity and child welfare) for Birmingham

COOK, EWART, M R C S resident orthopædic officer at the Grimsby and District Hospital

HENDERSON, BLANCHE, M B Lond asst R M O at Alverstoke Hospital, Gosport

JOHNSON, H D, M B Camb F R C S first surgical registrar at St Thomas's Hospital, London

KELLY, P M, B Chir Camb, F R C S second surgical registrar at St Thomas's Hospital, London

PENWILL MARJORIE L, M B Lond temp M O (maternity and child welfare) for Birmingham

Births, Marriages and Deaths

BIRTHS

ABERNETHY —On April 25, at Oxford, the wife of Mr Douglas Abernethy, F R C S E —a daughter

BISHOP —On April 20, at Sawston, Cambs, the wife of Dr P M F Bishop, of the Warden's House, Guy's Hospital—a daughter

COGAN —On April 28, at Southborough, Kent, the wife of Dr John Cogan—a son

DURBIN —On April 29, at Theydon Bois, Essex, the wife of Major F C Durbin, R A M C —a son

FLOCKTON —On April 25, at Dublin, the wife of Captain Peter Flockton, R A M C —a son

GROSE —On April 25 and April 26, the wife of Dr G N Grose, of Stanmore—twins, a girl and a boy

JAMESON EVANS —On April 24, at Lower Bourne, Farnham, the wife of Dr T C Jameson Evans—a son

METCALF —On April 24, at Wimbledon Hill, S W 19, the wife of Dr James Metcalf—a daughter

NEEDHAM,—On April 23, at Malpas, Cheshire, the wife of Lieutenant E J A Needham, R A M C —a son

RAMSAY —On April 28, at Salisbury, the wife of Dr Hugh Ramsay —a daughter

SHEPHERD —On April 25, the wife of Dr G A Shepherd, Chase Side, Southgate, N 14—a son

SMITH —On April 27, at Stourport, the wife of Dr J A Smith of Bromsgrove—a daughter

STREET —On April 18, at Bedford, the wife of Captain W J Street, R A M C —a daughter

WATTS —On April 20, at Oxford, the wife of Captain H Price Watts, R A M C —a son

MARRIAGES

CRUTCHLOW—PAGE —On April 21, at Kensington Everett Francis Crutchlow, surgeon lieutenant R C N V R, to Bridget Wendy Page

EVE—WOOLNER —On April 16, at Bagborough, Somerset, Ivor Stuart Eve, M R C S, lieutenant R A M C, to Stella Lucy Woolner

MCVICKER—MIDDLETON —On April 23, at Newton Valence, Daniel McVicker, M B, lieut colonel R A M C, to Ruth Vera Middleton

SILK—WESLEY —On April 16 at Aldwick, Sussex, the Reverend Claude Whitehall Silk, M D, to Frances Wesley

TEMPLE—LEIGHTON —On April 21, at Norwich, John Lloyd Temple M B, surgeon lieutenant R N V R, of Beckenham, to Charlotte Mary Leighton

TIERNEY—EVETTS —On April 24, at Londonderry, Richard Barton Holme Tierney, M R C S, surgeon lieutenant R N V R to Margaret Evetts

DEATHS

ANDREW —On April 20, at Dulverton Somerset, George William Macbeath Andrew B A Camb, M R C S

BEDDARD —On April 27, at Ringwood, William Oliver Beddard, M D Durh, barrister at law of the Middle Temple

BUNCH —On April 22, at Teignmouth, John Le Marc Bunch, M D, D Sc Lond, M R C P

HAVELL —On April 24, at Langham, near Bury St Edmunds, Charles Graham Havell, M D Durh of Felixstowe aged 83

MILLAR —On April 20, Ramsay Millar, M B Glasg, D P H, of Darton Hall near Barnsley, aged 65

PRINGLE —On April 21 at Whiteflat Killearn, Stirlingshire, James Hogarth Pringle, M B Edin F R C S

SALWEY —In April, by enemy action, James Salwey, M R C S, aged 24

SIMPSON —On April 27, George Maxwell Simpson, M D Brux, M R C S, of Upper Brook Street London W

TROWER —On April 27, at St Leonards on Sea, Arthur Trower, M R C S, aged 81

BURROUGHS WELLCOME AND CO are now making their Tabloid Ammonium Chloride in a combined special coating and sugar coating which remains unaffected by the acid media of the stomach for from 3–4 hours, but breaks down in the alkaline media of the small intestine Local irritation to the stomach lining is thus prevented by large doses of ammonium chloride

BRITISH DRUG HOUSES have issued tablets of vitamin C for infants, each tablet containing 5 mg of ascorbic acid, roughly the equivalent of two teaspoonfuls of orange juice The tablets dissolve readily in warm milk or in the infant's feed For adults and the treatment of severe deficiencies tablets containing 25 or 50 mg are available

ORIGINAL ARTICLES

APPARENTLY TRIVIAL HEAD INJURIES

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Most of the cases reached this hospital within 48–72 hours of injury and in the course of routine evacuation from hospitals in or near London They were not specifically referred to the head-injury centre, and it may therefore be concluded that the patients were believed to have sustained minor injuries only and were not regarded as in need of special investigation or treatment

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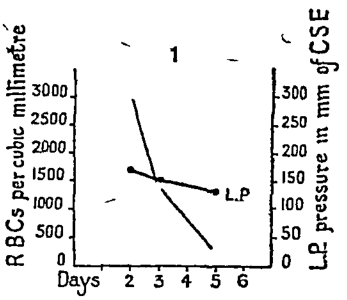
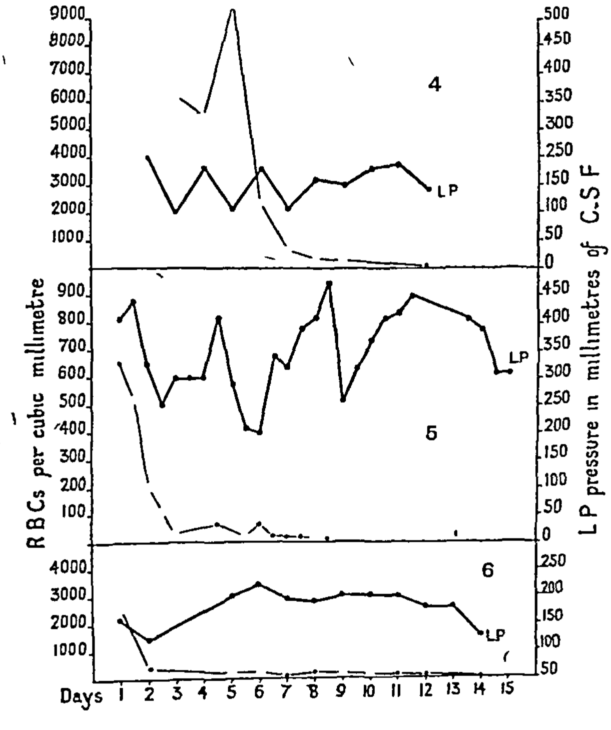
It seems probable that the degree of bleeding depends largely on the intracranial venous pressure. When there are torn veins, œdema of the brain, and a high intracranial pressure there is a considerable rise of intracranial venous pressure and hæmorrhage takes place freely. If, by dehydration, the intracranial pressure is lowered the intracranial venous pressure should fall also, and bleeding from torn veins should occur less readily. The present series certainly does not support the belief that lowering intracranial pressure promotes further hæmorrhage.



RESULTS AND PATHOLOGY

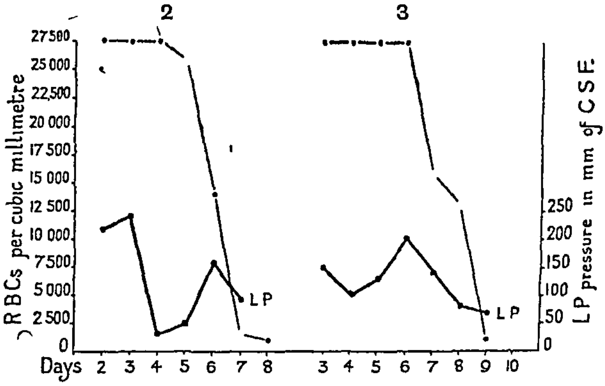
There were no deaths among our 53 cases, and all but one of the patients were discharged from hospital free from symptoms. The single exception was a man of 78 in poor general condition who, in addition to his head injury, had sustained crushing of both feet. Even this patient had no signs or symptoms referable to the central nervous system on transfer to another hospital. Follow-up is being undertaken, but evacuation and other factors make it difficult.

In the absence of any post-mortem investigations we can only infer the nature of the intracranial lesions. The presence of abnormal clinical signs referable to the central nervous system, and their disappearance under observation, show that in 41 of the 53 cases a recoverable injury to the brain had been sustained. The presence of blood in the cerebrospinal fluid in 16 cases indicates the occurrence of at least a moderate degree of bruising or contusion of the brain. The 5 cases with a red-cell count in the C.S.F. of over 1000 per c.mm. would probably have shown cortical laceration. The rapidity of recovery in the cases with normal intracranial pressure and cerebrospinal fluid show that the injury present must have been of a minor character. The contre-coup lesion in some cases of injury may be a laceration of the brain or its coverings, but it is reasonable to suppose that less severe injuries from this cause may consist of a local œdema only. Such a minor cerebral contre-coup lesion might well be associated with a normal intracranial pressure and a C.S.F. free from blood, and yet give rise to abnormal clinical signs. Moreover, the apparently slight injuries in this series may later be capable of producing areas of local cortical atrophy such as are demonstrable by encephalography in some severe cases within a few weeks of injury, which may be revealed by this means or at autopsy in patients with a history of head injury long before.



PRACTICAL POINTS IN TREATMENT

In initial treatment of the scalp wound the essentials for securing primary healing are a clean skin-field, which can be obtained only by wide shaving of the scalp, washing with ordinary soap and water and subsequent cleansing with spirit and bichloride of mercury, total excision of all damaged tissue, removal of foreign bodies, and suturing of the galea and skin in two layers without tension by closely approximated black silk sutures. Even when there is severe loss of scalp tissue suture without tension can usually be achieved by separating the scalp from the pericranium widely in all directions, or by making an additional incision running off at an angle from the main wound. If these essentials are borne in mind the majority of wounds of this kind will heal and will allow of the removal of all the stitches on the third day. In view of the underlying intracranial injury present in so many of the cases, local anæsthesia with 1% Novocaine should be employed whenever possible. As a rule the patients tolerate this well and are cooperative.



Treatment of the underlying brain injury is essentially simple and consists in measures directed to maintaining intracranial pressure at a normal level, whether it be high or low initially. The steps are threefold: regulation of fluid intake, elimination of fluid by the bowel, and direct removal of C.S.F. from the spinal theca by lumbar puncture. The first step is easily taken by allowing only 30 oz. of fluid by mouth daily; this can be reduced later to 20 oz. if the intracranial pressure does not fall rapidly, or increased to 50 oz. daily if the patient becomes dehydrated, showing increasing physical signs, a dry coated tongue or a low intracranial pressure. Fluid can most satisfactorily be eliminated by the bowel by slowly running into the rectum 2 oz. of a saturated solution of magnesium sulphate and instructing the patient to retain this as long as possible. This procedure may be carried out once, twice or even more often daily when intracranial pressure is high. Routine lumbar puncture still further reduces a high intracranial pressure by the direct removal of fluid, and it is usually desirable to remove at each puncture as much fluid as is necessary to bring the pressure down to, or below, the normal level. Thecal puncture may have to be repeated as often as four-hourly in some cases, while in others the daily withdrawal of fluid is adequate.

SUMMARY

A series of 53 cases of apparently trivial head injury is reported, many with scalp wounds but none with fracture of the skull.

Operation had been performed elsewhere on 27 of the patients, but primary healing had occurred in *only* 2, many had retained foreign bodies, most had only an inch of scalp shaved round the wound, and widely separated through and through sutures, usually of fishing gut, had been used

Abnormally raised or lowered intracranial pressure (as measured by lumbar puncture) was found in 19, blood was present in the C S F in 16, 41 (77%) showed abnormal physical signs referable to the central nervous system

Lumbar puncture did not increase intracranial bleeding, the results even indicated that lowering the pressure may reduce bleeding

The intracranial pressure should be maintained at normal level by regulation of the fluid intake, elimination of fluid by the bowel, and judicious use of lumbar puncture

The scalp wound should be treated by wide shaving of the scalp, cleansing, total excision of damaged tissue and removal of foreign bodies, and suture of the galea and skin in two layers without tension by closely approximated silk sutures

At the time of injury many cases can be treated best by the application of a first-aid dressing and transfer to a centre where there are adequate facilities for investigation and treatment

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"SUBSTANCE B" OF DIPHTHERIA TOXIN AND DIFFUSING FACTOR

By Douglas McClean, M B Lond, M R C S
BACTERIOLOGIST IN CHARGE OF THE VACCINE LYMPH DEPARTMENT, LISTER INSTITUTE OF PREVENTIVE MEDICINE, ELSTREE, HERTS

O'Meara (1940, 1941) has recently put forward a conception of the toxæmia of diphtheria which depends on the hypothesis that diphtheria toxin is composed of varying amounts of two substances, provisionally called substance A and substance B The fraction of toxin which is of high lethal value for the guineapig and which predominates in the toxin as usually prepared from Park-Williams No 8 strain is referred to by him as substance A, and that which predominates in saline extracts made from cultures of gravis strains on Loeffler's medium and in diphtheria toxin as produced in the body is referred to as substance B O'Meara considers that the effect of the substance-B component of the toxin is to promote the penetration of the tissues by substance A, thus enabling it to cause its specific damage He suggests that the synergic effect of these two substances accounts for the clinical characters of hypertoxic diphtheria and the disappointing results of serum therapy in cases of this type O'Meara stated that substance B has properties in many respects similar to those of the diffusion factor which increases the permeability of the tissues (McClean 1930, 1931, Hoffman and Duran-Reynals 1931), and that evidence of their identity was accumulating Since it has already been shown (McClean 1936) that specific antisera can be prepared against diffusion factors of bacterial origin, the possible identification of substance B as one of those agents held out the hope that effective antisera to this substance might be produced

The suggestion that a diffusion factor obtained from saline extracts of gravis strains of *Corynebacterium diphtheriæ* might be responsible for the results recorded by O'Meara was of particular interest since an earlier investigation (McClean 1936) of the production of diffusion factor by *C diphtheriæ* had indicated that, although some strains of this organism produce detectable quantities of this substance, none of them produce amounts comparable with those obtained from *Clostridium welchii*, streptococci, pneumococci or staphylococci It was doubtful whether the diffusion factor produced by a few of the 70 strains examined was present in sufficient quantity to influence the character of the infection by these organisms Moreover, there was no indication that the capacity to produce this factor was particularly associated with gravis strains, some mitis strains produced a greater degree of diffusion than many gravis and intermediate strains, and a few mitis strains caused diffusion equal to that produced by the more active strains of the other types All these observations were made, however, on filtrates from broth cultures and, in view of O'Meara's statement that substance B predominates in saline extracts of gravis strains grown on Loeffler's medium, it was decided to re-examine this question Since there is no evidence that O'Meara has examined intermediate and mitis strains for their capacity to produce substance B, it was decided to include some of these strains in the series examined for diffusion factor

Following the work of Chain and Duthie (1939) it has been shown that these diffusion factors are closely associated if not identical with mucolytic enzymes which hydrolyse the hyaluronic acid present in the mucin of synovial fluid, vitreous humour, umbilical cord and the skin (McClean and Hale 1941) This group of enzymes are therefore designated by the name "hyaluronidase" As a result of this work improved methods for the preparation of these enzymes have been developed and they can now be titrated by viscosimetric and other methods which are more accurate than the estimation of diffusing factor in the skin In the light of this knowledge it is possible to form a more definite opinion as to the significance of the production of this substance by *C diphtheriæ* than was possible in 1936

The observations to be recorded here were strictly confined to the question whether strains of *C diphtheriæ* of gravis, intermediate and mitis type produce significant amounts of hyaluronidase or diffusion factor, and whether there is any evidence of association between this factor and the substance B postulated by O'Meara These observations do not, and were not intended to, elucidate the question whether a second component of diphtheria toxin exists or whether it plays the part described by O'Meara in the causation of hypertoxic diphtheria

MATERIALS AND METHODS

Altogether, 50 strains of *C diphtheriæ* were examined 15 gravis, 13 intermediate and 22 mitis strains The gravis strains included two derived from Dublin and reputed to be good producers of substance B, Dublin strain No 38 was kindly supplied by Dr O'Meara and Dublin strain No 9 by Dr Trevan of the Wellcome Physiological Research Laboratories Six of the other gravis strains were freshly isolated, the remainder being from stock cultures Seven of the intermediate strains were freshly isolated, the remaining six being stock cultures Eight of the mitis strains were freshly isolated and fourteen, including the Park-Williams No 8 strain, were from stock cultures

In the earlier experiments, all the strains were cultivated for 48 hours in three different media (*a*) a proteose peptone infusion broth containing 0 3% maltose, (*b*) a similar broth in which the maltose was replaced by 1% of a solution containing hyaluronic acid, and (*c*) on slopes of Loeffler's medium The broth containing maltose was of the same composition as that employed in my previous observations on *C diphtheriæ*, the hyaluronic-acid broth was used because it has been found that the inclusion of this substance in the culture medium greatly enhances the capacity of *Cl welchii* and streptococci to produce hyaluronidase or diffusion factor (McClean and Hale 1941, McClean 1941) The growth on each serum slope was washed off in 0 5 ml physiological saline and allowed to extract at room temperature for 48 hours in accordance with O'Meara's directions for obtaining substance B The organisms were removed from the broth cultures and the saline extracts by centrifugation and the supernatant fluid tested for diffusing and hyaluronidase activity Filtration was not employed

In later experiments, when it had been established that any strain capable of producing diffusing factor or hyaluronidase produced the maximum amount in broth containing hyaluronic acid, we discontinued the use of the other two media for all the strains Only those strains producing diffusing factor were then cultivated on Loeffler's medium in order to determine whether this factor was present in the saline extracts

Diffusing activity in the skin was tested by the method already described (McClean and Hale 1941), which depends on the determination of the highest dilution of the culture supernatant which will produce a significant (20%) increase of spread in the dermis Isotonic hæmoglobin solution was used as diluent and as the coloured indicator of diffusion Hyaluronidase activity was tested by a method already described (McClean 1941) which depends on determining the highest dilution which will inhibit the power of a mucin solution to form a typical "mucin clot" in the presence of acetic acid Hyaluronidase activity can also be accurately measured by viscosimetry, but this method is not suitable for weak preparations, since although it is accurate it is not sufficiently delicate to detect small amounts of the enzyme

RESULTS

It is not proposed to give the results of the examination of all these strains in detail It will suffice to state that out of the 50 strains examined only two gravis, one intermediate and three mitis strains produced significant diffusion in the skin and this only at a dilution of 1 in 2 of the culture supernatant fluid Significant diffusion at a higher dilution could only be obtained with one gravis strain All the other strains, even when grown in broth containing hyaluronic acid, failed to produce any diffusing factor or hyaluronidase, this suggests that these strains were incapable of elaborating this enzyme under the most favourable conditions With the exception of one gravis strain, none of them produced sufficient enzyme to be detectable by the test for the destruction of the clotting power of mucin Although the results of this test run pari passu with diffusing activity in the skin, it is not sufficiently delicate to detect an enzyme which fails to produce increased diffusion at a dilution of 1 in 10

The two positive gravis strains produced an increase in the area of spread in the skin of 72% and 29% respectively in a dilution of 1 in 2 of culture supernatant in hyaluronic-acid broth The more active strain of the two also produced a 44% increase of spread at a dilution of 1 in 10 The saline extracts of both of these strains failed to produce any diffusion in the dermis The one positive intermediate strain only produced a 20% increase of spread at a dilution of 1 in 2 when grown in hyaluronic-acid broth The three positive mitis strains produced an increase of spread of 29%, 18% and 38% at a dilution of 1 in 2 when grown in hyaluronic-acid broth Saline extracts were inactive

Neither of the Dublin strains, both reputed to be good producers of substance B, produced detectable amounts of diffusing factor even when they were cultivated in hyaluronic-acid broth There was no trace of this enzyme in the saline extracts which, according to O'Meara, should have been rich in substance B This fact, coupled with the observation that those strains which do develop diffusing factor in broth culture produce little or none in saline extracts of the organisms, is definite evidence that this factor cannot be associated with substance B The general observation with these 50 strains and the 79 previously examined is that only a small proportion produce detectable amounts of this enzyme, and that none of them produce amounts comparable with the enzyme obtained from the gas-gangrene group, streptococci, pneumococci or staphylococci, this suggests that it is unlikely that this enzyme plays an important part in the symptom-complex of diphtheria

In all the earlier work with this enzyme derived from testis and from other pathogenic organisms the diffusing activity in the skin was estimated by injecting dilutions of the enzyme together with a standard dose of the classical diphtheria toxin derived from P W 8 strain The size of the resulting diphtheria lesions in the skin was measured after 48 or 72 hours If this enzyme had produced an aggressive action on the diphtheria toxin, similar to that described by O'Meara for substance B, it would have been expected that the resulting toxin lesions would have been more œdematous, hæmorrhagic and necrotic than the control lesions of diphtheria toxin alone Even when many hundreds of minimal diffusing doses of the enzyme were injected together with the toxin, the lesion was normal in appearance apart from the fact that it was spread over a larger area of skin

SUMMARY AND CONCLUSIONS

No evidence has been obtained of any association between diffusing factor or hyaluronidase and substance B postulated by O'Meara to be present in toxic diphtheria filtrates

Only a small proportion of strains of *C diphtheriæ* of any type produce detectable amounts of diffusing factor Saline extracts of those strains that do produce this enzyme in broth culture show little or no diffusing activity

The capacity to produce this enzyme is not confined to gravis strains, it can be detected in broth cultures of a few intermediate and mitis strains

The amount of this enzyme produced by any strain is very small compared with that found in cultures of organisms of the gas-gangrene group, streptococci, pneumococci or staphylococci In view of this fact, and the small proportion of strains from which the enzyme can be obtained at all, it is doubtful whether an enzyme of this nature makes any material contribution to the symptom-complex of diphtheria

I am indebted to Dr Robert Cruickshank of the North Western Group Laboratory, L C C, and Dr Mary Barratt of the Lister Institute for the supply of freshly isolated cultures, and to Prof J W McLeod of the Leeds school of medicine and the National Collection of Type Cultures for stock strains of various types

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PEPTIC ULCER IN THE ROYAL NAVY

ÆTIOLOGY

By R S Allison, M D Belf, F R C P
SURGEON COMMANDER R N V R

Study of 100 naval ratings suffering from gastroduodenal dyspepsia showed that about half of them had radiological evidence of ulcer In almost all the cases the symptoms were typical and of long duration, and it was thought that the proportion diagnosed as ulcer was probably an underestimate of the true figures The same patients were investigated further in order to assess the relative importance of certain recognised ætiological factors Wherever possible the opportunity was taken of comparing the results with those obtained in a control series of 210 naval ratings who were also under observation at the time Though all of these were sick they were not suffering from dyspepsia The following points, specially, were made the subject of inquiry

1 Age at which severe disabling dyspepsia was most common

2 Influence of type of service, rating, type of ship, class of service

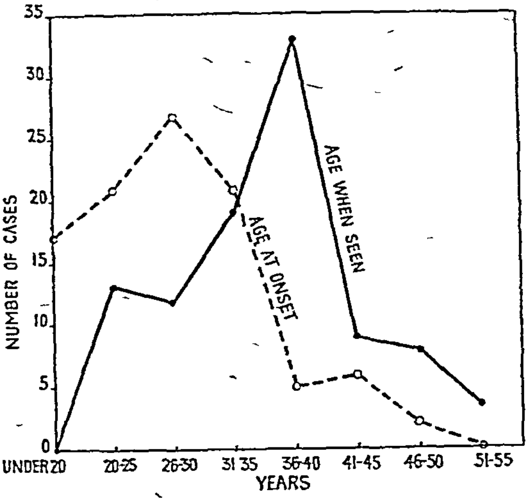
3 Mechanical and toxic factors, defective and septic teeth; irregularity of meals and bolting food, tobacco and alcohol

4 Diet, pre war and present diet, vitamin C deficiency, food allergy and migraine

5 Influence of anxiety related to home circumstances, service life, difficult duties, seasickness, lack of sleep, war experiences, relation of worry to dyspepsia

Age—Half of the dyspeptics in this series were between the ages of thirty and forty when they came under observation, and about a third were between thirty-six and forty Only 27 patients were under thirty The actual age of onset of the symptoms was considerably less The difference between the two—age of onset and age when seen—is demonstrated in the figure Though allowance must be made for the fact that 35% of the cases had been under treatment before, in peace-time, the curves show that the major proportion had had dyspepsia for some years before it became sufficiently bad to justify admission to hospital

Type of service—All the usual naval ratings were represented among the patients—e g, seamen, stokers, marines, signalmen, telegraphists, cooks—and there was nothing to suggest that peptic ulcer was more prevalent in one branch of the service than another The type of ship in which the 100 gastric patients and the control series of 210 non-gastric cases were serving at the time they went sick is shown in table I The figures suggest that there was a higher proportion of dyspeptics in destroyers and small auxiliary craft than there were controls, but the numbers are too small and the scope of the comparison too limited to give them real statistical value As regards class of service, comparison again



of the gastric with the non-gastric patients (table II) showed that there were more pensioners and Royal Fleet Reservists in the former group than in the latter, whereas the active-service ratings and Royal Naval Reservists were equally distributed Men who had retired from the active list and been recalled at the outbreak of hostilities were more affected by dyspepsia in the first year of the war than those who were still serving or who were accustomed to seagoing in peacetime This finding is in keeping with the previous observation on age, for the older men belonged mostly to the pensioner and fleet-reserve classes It may help to explain the apparent frequency of dyspepsia in destroyers, for many of these ships which were in reserve were manned by pensioners and reservists at the outbreak of war The low proportion of dyspeptics among conscripts and volunteers is probably also related to age, for these men were mostly in the 20–30 group, at which age severe dyspepsia was less commonly seen in the first year of war

Mechanical and toxic factors—The teeth were examined from a functional standpoint and for gross dental sepsis In two or three cases they were insufficient for mastication or there were septic root stumps, but, as a whole, the dental state was much better than one would expect to find in a group of similar patients in civil life As regards bolting food, the importance of this factor in causing indigestion in sailors was stressed by naval medical officers in the Report on the Health of the Navy for 1935 (p 11), and the present experience is in accord with their views Most of the young dyspeptics seemed to eat too much and to hurry over their food, paying insufficient attention to chewing, while in many of the cases of longer duration, the pensioners and reservists, it was evident that the sudden transition from home conditions with their regular routine, back to service life had disorganised their carefully acquired habits of dieting themselves and taking plenty of time over meals Irregularity of meal times and long periods without food were mentioned by a small proportion of cases only probably because in ships this difficulty does not often arise, emergency rations being served when the duties are especially arduous or a regular meal impossible Tobacco and alcohol may be used more by naval personnel than by civilians but in this series 10% were non-smokers and 20% took no alcohol or very little Periodic over-drinking when on shore leave, though less common today than formerly seemed to have been a factor in initiating symptoms in a number of cases, and in some others for their recurrence Excessive smoking (which was considered as anything above 2–3 oz pipe tobacco or 100 cigarettes a week) was admitted by about a third of the dyspeptics

TABLE I—SHOWING WHERE DYSPEPTICS AND CONTROLS WERE SERVING AT TIME OF ADMISSION

Where serving	Dyspeptics (%)	Controls (%)
Battleships battlecruisers	1	1 4
Aircraft carriers	1	1 4
Cruisers	3	6 1
Armed merchant cruisers	2	3 8
Destroyers	22	9 4
Trawlers drifters mine sweepers patrol boats	35	27 3
Submarines	1	0
Depot ships	0	1 4
Training ships	0	0 5
Shore establishments	34	48 6

DIET

Many patients attributed their indigestion to the diet which they said was too heavy or too greasy There was a general distaste for tinned food, and in some instances it was alleged meals were overcooked or "spoiled"

Prewar and war diet—Those who blamed the diet specially were men who had been dieting themselves before the war (33%) They were pensioners, reservists, volunteers and conscripts and had been living at home before they were called up Dieting had invariably been adopted on medical advice, though in many cases apparently there had been no preliminary investigation to confirm the presence of ulcer They had been living principally on milk foods, fish, eggs white meat, bread and butter Fresh fruit was seldom taken regularly many claiming that it disagreed with them and caused "acidity," or that they had been told to avoid it Since recall or entry into the service, these patients had been on the ordinary naval rations For breakfast they had porridge, fried bacon, egg or tinned sausage, for dinner roast beef, potatoes, cabbage, beans, tinned carrots or peas, suet pudding or jam roll, for tea bread and butter, and for supper a kipper, hash or tinned beef with pickles and cheese *

TABLE II—CLASS OF SERVICE OF DYSPEPTICS AND CONTROLS

Class	Dyspeptics (%)	Controls (%)
Regular Navy	24	28 3
Pensioners	17	8 5
R F R	17	7 6
R N R	7	7
R N V R	2	4 7
Volunteers (hostilities only)	24	25 5
Conscripts	8	17 4
T 124	1	1

Pensioners—Men who served at least 22 years and qualified for pension Employed in civil life until recalled for war service

R F R—Former period of active service Civil occupation until recalled

R N R—Seamen in peace-time—e g, merchant service, fishermen

R N V R—Civilians doing short period training with fleet annually in peace time

T 124—Merchant seamen serving in ships taken over by Admiralty

While it is clear that the menu was sufficiently varied and nourishing for healthy men engaged in hard physical work, patients who had been previously dieting themselves obviously could not face it Some, who were free of symptoms at the time, tried to eat everything at first, others modified the diet from the start Hunger made many of them attempt a full meal in spite of pain, but this was almost invariably followed by more severe pain or by vomiting In consequence, those who were at sea and could not supplement their rations by other items more to their taste gradually formed the habit of doing without meals and of substituting for them snacks of bread and butter tea or a dose of alkaline powder, and this may explain the great loss of weight which many of them showed on admission to hospital

Vitamin-C deficiency—The results obtained by the methods in use for estimating vitamin-C deficiency appear to be somewhat unsatisfactory and variable For example many healthy subjects or convalescents on a full diet fail to excrete an excess of ascorbic acid after three repeated test doses of 300 mg daily In this series the saturation test was performed on 84 patients and deficiency was not conceded unless it took more than three days (300 mg ascorbic acid daily) for the urine to show evidence of saturation Adopting this standard 31 patients or approximately 40% of the total showed evidence of deficiency (table III) though there were no clinical indications of scurvy Archer and Graham measured by viscosimetry, but this method is not suitable for weak preparations, since although it is accurate it is not sufficiently delicate to detect small amounts of the enzyme

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* The list is made up from the statements of patients

RESULTS

It is not proposed to give the results of the examination of all these strains in detail It will suffice to state that out of the 50 strains examined only two gravis, one intermediate and three mitis strains produced significant diffusion in the skin and this only at a dilution of 1 in 2 of the culture/supernatant fluid Significant diffusion at a higher dilution could only be obtained with one gravis strain All the other strains, even when grown in broth containing hyaluronic acid, failed to produce any diffusing factor or hyaluronidase, this suggests that these strains were incapable of elaborating this enzyme under the most favourable conditions With the exception of one gravis strain, none of them produced sufficient enzyme to be detectable by the test for the destruction of the clotting power of mucin Although the results of this test run pari passu with diffusing activity in the skin, it is not sufficiently delicate to detect an enzyme which fails to produce increased diffusion at a dilution of 1 in 10

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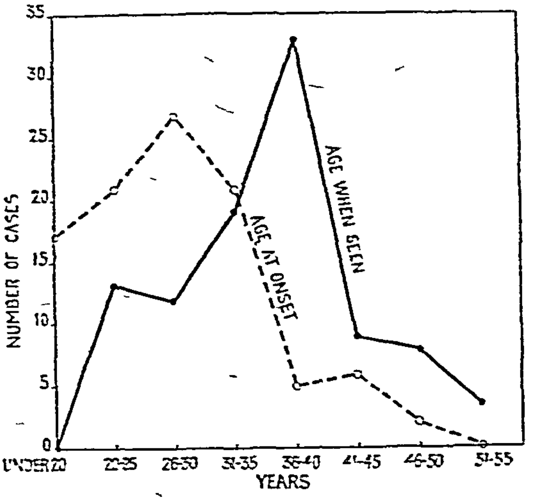
5 Influence of anxiety related to home circumstances, service life, difficult duties, seasickness, lack of sleep, war experiences, relation of worry to dyspepsia

Age—Half of the dyspeptics in this series were between the ages of thirty and forty when they came under observation, and about a third were between thirty-six and forty Only 27 patients were under thirty The actual age of onset of the symptoms was considerably less The difference between the two—age of onset and age when seen—is demonstrated in the figure Though allowance must be made for the fact that 35% of the cases had been under treatment before, in peace-time, the curves show that the major proportion had had dyspepsia for some years before it became sufficiently bad to justify admission to hospital

Type of service—All the usual naval ratings were represented among the patients—e g, seamen, stokers, marines, signalmen, telegraphists, cooks—and there was nothing to suggest that peptic ulcer was more prevalent in one branch of the service than another The type of ship in which the 100 gastric patients and the control series of 210 non-gastric cases were serving at the time they went sick is shown in table I The figures suggest that there was a higher proportion of dyspeptics in destrovers and small auxiliary craft than there were controls, but the numbers are too small and the scope of the comparison too limited to give them real statistical value As regards class of service, comparison again



of the gastric with the non-gastric patients (table II) showed that there were more pensioners and Royal Fleet Reservists in the former group than in the latter whereas the active-service ratings and Royal Naval Reservists were equally distributed Men who had retired from the active list and been recalled at the outbreak of hostilities were more affected by dyspepsia in the first year of the war than those who were still serving or who were accustomed to seagoing in peace-time This finding is in keeping with the previous observation on age, for the older men belonged mostly to the pensioner and fleet-reserve classes It may help to explain the apparent frequency of dyspepsia in destroyers, for many of these ships which were in reserve were manned by pensioners and reservists at the outbreak of war. The low proportion of dyspeptics among conscripts and volunteers is probably also related to age, for these men were mostly in the 20–30 group at which age severe dyspepsia was less commonly seen in the first year of war

Mechanical and toxic factors—The teeth were examined from a functional standpoint and for gross dental sepsis In two or three cases they were insufficient for mastication or there were septic root stumps but, as a whole, the dental state was much better than one would expect to find in a group of similar patients in civil life As regards bolting food the importance of this factor in causing indigestion in sailors was stressed by naval medical officers in the Report on the Health of the Navy for 1935 (p 11) and the present experience is in accord with their views Most of the young dyspeptics seemed to eat too much and to hurry over their food, paying insufficient attention to chewing while in many of the cases of longer duration, the pensioners and reservists, it was evident that the sudden transition from home conditions with their regular routine back to service life had disorganised their carefully acquired habits of dieting themselves and taking plenty of time over meals Irregularity of meal times and long periods without food were mentioned by a small proportion of cases only, probably because in ships this difficulty does not often arise emergency rations being served when the duties are especially arduous or a regular meal impossible Tobacco and alcohol may be used more by naval personnel than by civilians but in this series 10% were non-smokers and 20% took no alcohol or very little Periodic over-drinking when on shore leave though less common today than formerly seemed to have been a factor in initiating symptoms in a number of cases and in some others for their recurrence Excessive smoking (which was considered as anything above 2–3 oz pipe tobacco or 100 cigarettes a week) was admitted by about a third of the dyspeptics

TABLE I—SHOWING WHERE DYSPEPTICS AND CONTROLS WERE SERVING AT TIME OF ADMISSION

Where serving	Dyspeptics (%)	Controls (%)
Battleships battlecruisers	1	1·4
Aircraft carriers	1	1·4
Cruisers	3	6·1
Armed merchant cruisers	2	3·8
Destroyers	22	9·4
Trawlers drifters mine-sweepers patrol boats	35	27·3
Submarines	1	0
Depot ships	0	1·4
Training ships	0	0·5
Shore establishments	34	48·6

DIET

Many patients attributed their indigestion to the diet which they said was too heavy or too greasy There was a general distaste for tinned food and in some instances it was alleged meals were overcooked or "spoiled"

Prewar and war diet—Those who blamed the diet specially were men who had been dieting themselves before the war (33%) They were pensioners reservists volunteers and conscripts and had been living at home before they were called up Dieting had invariably been adopted on medical advice though in many cases apparently there had been no preliminary investigation to confirm the presence of ulcer They had been living principally on milk foods fish eggs white meat, bread and butter Fresh fruit was seldom taken regularly, many claiming that it disagreed with them and caused 'acidity' or that they had been told to avoid it Since recall or entry into the service, these patients had been on the ordinary naval rations For breakfast they had porridge fried bacon egg or tinned sausage, for dinner roast beef potatoes, cabbage beans tinned carrots or peas suet pudding or jam roll; for tea bread and butter, and for supper a kipper, hash or tinned beef with pickles and cheese *

TABLE II—CLASS OF SERVICE OF DYSPEPTICS AND CONTROLS

Class	Dyspeptics (%)	Controls (%)
Regular Navy	24	28·3
Pensioners	17	8·5
P F P	17	7·6
P N R	7	7
R N V P	2	4·7
Volunteers (hostilities only)	24	25·5
Conscripts	8	17·4
T 124	1	1

Pensioners—Men who served at least 22 years and qualified for pension Employed in civil life until recalled for war service

P.F R—Former period of active service Civil occupation until recalled

R.N.P—Seamen in peace-time—e g merchant service, fishermen

P.N V.P—Civilians doing short period training with fleet annually in peace-time

T 124—Merchant seamen serving in ships taken over by Admiralty

While it is clear that the menu was sufficiently varied and nourishing for healthy men engaged in hard physical work, patients who had been previously dieting themselves obviously could not face it Some who were free of symptoms at the time, tried to eat everything at first; others modified the diet from the start Hunger made many of them attempt a full meal in spite of pain but this was almost invariably followed by more severe pain or by vomiting In consequence those who were at sea and could not supplement their rations by other items more to their taste gradually formed the habit of doing without meals and of substituting for them snacks of bread and butter tea or a dose of alkaline powder, and this may explain the great loss of weight which many of them showed on admission to hospital

Vitamin-C deficiency—The results obtained by the methods in use for estimating vitamin-C deficiency appear to be somewhat unsatisfactory and variable. For example many healthy subjects or convalescents on a full diet fail to excrete an excess of ascorbic acid after three repeated test doses of 300 mg daily In this series the saturation test was performed on 84 patients and deficiency was not conceded unless it took more than three days (300 mg ascorbic acid daily) for the urine to show evidence of saturation. Adopting this standard 34 patients or approximately 40% of the total showed evidence of deficiency (table III) though there were no clinical indications of scurvy Archer and Graham

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* The list is made up from the statements of patients

(1936) and others, have drawn attention to vitamin-C deficiency in peptic ulcer and in hæmatemesis, but from the present experience it seemed clear that any subscorbutic state was due not to a fault in the naval diet but to inability on the part of the dyspeptics to eat the sufficient and varied dietary provided

Food allergy and migraine —Many patients stated that certain articles of diet were liable to precipitate an attack of indigestion causing flatulence, heartburn or actual pain The items mentioned most often were beef, pork, bacon, sausage, potatoes, cheese, pickles, vinegar, fruit and vegetables such as lettuce, celery, cucumber, tomato, pears, apples, oranges. Fried or fatty foods also were often cited It was evident that part of the prejudice in many cases was based primarily on medical advice They had been told what to avoid and had conformed strictly to the rules It was natural that, since they had eaten the forbidden articles, these should be considered responsible for the recurrence of symptoms In one case it was possible to obtain striking evidence of idiosyncrasy This was a seaman (case 29) who said that vinegar upset him, causing stomach pain and irritation of the skin Smelling a bottle of vinegar made him perspire freely and brought on abdominal pain, while rubbing a little vinegar gently on the skin caused an urticarial rash which was intensely irritating and disappeared only after several hours

TABLE III—NUMBER OF DAYS ON 300 MG ASCORBIC ACID REQUIRED TO PRODUCE SATURATION

Days	No of cases	Days	No of cases
4–5	10	8–9	10
6–7	12	10–12	2

In a few cases, the intolerance to fat or special foods seemed to be related to migraine which was present either alone, and probably responsible for the gastro-intestinal disturbance, or associated with ulcer In the dyspeptic series 14 patients complained of headache and in 10 of these the description suggested migraine The following is an example

CASE 22 —Able seaman, R F R, aged 34 Tendency to recurring indigestion and headaches since boyhood Joined Navy at 17 and from the start of his service career suffered from seasickness Sick if compelled to travel in a bus for a long distance When at sea liable to severe headaches, felt on either side in the parietal region or in the occipital region, and throbbing in character After an hour or so often goes "blind," "a deep red mist" spreading over the vision In this state he bumps into objects on deck and once or twice has nearly gone over the side The visual disturbances never last longer than half an hour On returning to civil life in 1935, when he went on the reserve, he continued to get the severe headaches periodically They could be brought on by eating cheese, corned beef or rice, and for some hours he would be prostrated by them In 1935 he began to get definite epigastric pain 2–3 hours after food which was relieved by taking more food or alkali The pain felt like "acute hunger" Sometimes he had the headache as well as the pain but there was no recurrence of the blindness Since his recall in September, 1939, for war service, he has been serving in a destroyer, and has had intensified symptoms of recurring pain, headache and blindness

The provisional diagnosis in this case was migraine made worse by seasickness Ulcer was thought to be unlikely Radiography, however, showed that the duodenal cap was deformed and tender, and that an ulcer was present

Only 2 cases with migraine showed positive radiological evidence of ulcer and it was noteworthy that in no instance was there any evidence of disease of the gall-bladder or of gallstones The two syndromes—migraine and ulcer—were either closely related in time, or the migraine had preceded the duodenal symptoms and been replaced by them In the latter type it was common to get a history of recurring "bilious attacks," dating from childhood One patient with migraine had had asthma previously, and there were several instances of the former, and occasionally of the latter in the patients' family histories

ANXIETY

It is recognised that worry, due to loss of the sense of security, added responsibility or other such causes, predisposes to recurrence of attacks of indigestion and to the development of ulcer in susceptible persons Cases have been reported of perforation or hæmatemesis following on an emotional upset (Davies 1935) In the present series, about one patient in five showed some evidence of anxiety in their tense expression, wrinkled brows or in other signs Many were aerophagists (Allison and Thomas 1941). A series of 20 cases, in whom the history and findings were typical of ulcer, was selected for more detailed investigation of the personal history The results of this inquiry are summarised in table IV under sections A and B

Domestic life —Undue anxiety connected with the domestic or home life was mentioned 9 times, and in 4 of the cases the worry was connected with illness of a near relative or child Financial difficulties were the source of anxiety in 4 other men who were volunteers or conscripts, but this cause was rarely mentioned by the pensioners and reservists because most of them had their peace-time employment to return to at the end of the war, and their income had not been affected by being called up

Service life —In 6 men there was some difficulty in the performance of duties but only 2 found their work difficult because of lack of previous experience One was a pensioner marine (case 1) who was working in a busy staff office after having been many years out of the service The other (case 4), a thin anxious type, who volunteered for service at 39 because he was out of work, was stoking a trawler in the North Sea He had never been in a ship before and suffered badly from seasickness Seasickness played no important part in the cases as a whole, however, and only 2 men had been badly upset by actual war experiences Repeated aerial bombing had made one man (case 17) jumpy, irritable and unable to concentrate, but lack of sleep was an important contributory factor

Effect of worry on digestion —Out of the 20 patients, 7 recognised a connexion between their dyspepsia and worry or anxiety The following examples illustrate the nature of the association

CASE 1 —Marine pensioner, aged 46 Long history of mild dyspepsia in peace time Hæmatemesis shortly after called up in August, 1939 Duodenal ulcer Clerical duties in staff office Dissatisfaction with work "like a square peg in a round hole," always "underneath it" Sometimes feels "I want to get away and take something to buck me up, if only a couple of pints of beer, to put me on the level again" Indigestion daily When exasperated gets "a gripping pain," "almost crucifying" in its intensity

CASE 3 —Able seaman R N, aged 26. Dyspepsia began at age 18 At 20, appendicectomy and free of symptoms for three years Since then, until war, mild recurring attacks, only once in hospital in 1937 Since war, more severe pain with perforation of duodenal ulcer November, 1939 Sensitive to "nagging" and interference, and has often noticed "tingling" and gripping pain in the stomach when annoyed "It would put me off my food and I would have two smokes instead One would not be enough"

CASE 21 —Conscript, ord seaman, aged 25 Recurring attacks of typical ulcer pain since age 16, but has kept fairly free in the past two years by dieting A fisherman and unmarried, he was conscripted, together with a younger brother, in June, 1940, and sent to a training establishment Free of pain at the time but found the food too rich and heavy and pain recurred While proceeding on draft to join a ship some weeks later was taken suddenly ill with acute abdominal pain and perforated a duodenal ulcer He was the eldest of a family of seven He had always been over conscientious with a strong sense of duty He had never tried to evade responsibility but it had always worried him more than it should On such occasions he would get aching pain in the stomach His father died in May, 1940, a month before he was called up, and all the responsibility for settling his affairs devolved on him He left home with these still unsettled and he was worried constantly about the fishing boats and gear He hoped that he and his brother would be drafted to the same ship and only learnt to his intense

TABLE IV—PERSONAL HISTORY AND PERSONALITY IN 20 ULCER PATIENTS

Case	Rating	Age	A			B				C				Comments
			1	2	3	1	2	3	4	1	2	3	4	
1	Marine pens	46	+	−	−	+	−	−	−	+	−	−	+	Duod ulcer Hæm Aug 1939
2	A B , R F R	36	+	−	−	−	−	−	−	+	−	−	−	Duod ulcer
3	A B , A S	26	−	−	−	−	−	−	−	+	+	+	+	Duod ulcer Perf Nov 1939
4	Stok , H O vol	39	+	−	+	+	+	+	−	+	−	−	−	Gastric ulcer
5	O S , A S	24	−	−	−	−	−	−	−	−	−	−	−	Duod ulcer
6	P O , A S	32	−	−	−	+	−	−	−	−	+	+	−	Duod ulcer
7	Sailmaker, A S	32	−	−	−	+	−	−	−	−	−	+	+	Duod ulcer
10	A B , R F R	37	−	−	−	−	−	−	−	−	−	−	−	Duod ulcer
11	A B , R F R	36	−	−	−	−	−	−	−	−	−	−	−	Duod ulcer
12	Stok H O vol	49				Answers unreliable								Poor type Gastric ulcer
13	Mne , H O vol	40	−	−	+	−	−	−	−	+	−	−	−	Duod ulcer
15	A B , R F R	38	−	−	−	+	−	+	−	+	−	+	−	Duod ulcer
16	E A , pens	41	−	−	−	−	−	−	−	+	+	−	−	Duod ulcer Perf 1926
17	Ldg sea , A S	32	−	−	−	+	−	+	+	+	−	+	+	Duod ulcer Perf Jan 1941
21	Ord sea cons	25	+	−	+	−	−	−	−	+	−	−	−	Duod ulcer Perf June, 1940
22	A B , R F R	34	−	−	−	−	+	−	−	−	−	−	−	Duod ulcer Migraine
24	Marine cons	23	−	+	+	−	−	−	−	+	−	−	−	Duod ulcer
25	Marine pens	40	−	−	−	−	−	−	−	+	+	+	−	Gastric ulcer Melæna, April, 1940
26	Asst std , H O	30	−	−	−	−	−	−	−	−	−	−	−	Duod ulcer
28	Signalman, A S	38	−	−	−	−	−	−	−	−	−	−	−	Gastric ulcer
30	A B , R F R	39	−	−	−	−	+	−	−	+	−	−	−	Duod ulcer Migraine

A *Domestic life* 1 Anxiety over illness of relative 2 Unhappy marital relations 3 Financial difficulties

B *Service life* 1 Duties , lack of experience, special difficulties, extra responsibility, boredom or monotony
2 Seasickness 3, Lack of sleep 4 Anxiety following actual war experiences

C *Personality* 1 Overconscientiousness 2 Ambition, frustration resentment
3 Adaptability, obsessive tendencies, intolerance of interference 4 Swings of mood , depression , excessive work

disappointment that this would not be so five hours before he perforated his duodenal ulcer.

While the majority of the patients in this series had no great domestic worries to contend with, and were thoroughly conversant with their duties, the same personality traits one sees among gastric patients in civil life were often encountered—overconscientiousness, sense of frustration, obsessional tendencies and swings of mood towards depression. The frequency of these characteristics as judged by the patients' replies to leading questions, and by their behaviour while under observation, is given in table IV, under C. It is admittedly difficult to assess such qualities fully and accurately, but it was evident, even on superficial examination, that abnormal trends had played a part in determining deep emotional disturbances in many cases. Phrases such as "When I do a job I like to do it properly", "I always think I can do better", "I have to be absolutely sure a thing is right before I can let it go" expressed conscientiousness, and this often led a patient to undertake more work or responsibility than was reasonable. Anxiety and abnormal mental tension resulted with a fixed determination to see the job through. Meals were neglected, too much tobacco smoked, and pain temporarily silenced by alkaline powder. In other instances, if the patient were put to work he considered unfair, or unsuited to his experience, or if he were blamed, as he considered unjustly, a fixed sense of frustration or resentment developed.

CASE 3 was an example of this. Some years ago he had been keen and ambitious but this had been "killed" by what he considered unfair treatment. He suffered periods of depression and was waiting only for the day when his service would terminate. Periodic over indulgence in alcohol was his reaction, and this, coupled with over smoking, may have contributed to the development of ulcer.

Another example was that of a man who had married in 1932, but had seen little of his wife because his service had been spent abroad. He had "strong views" on many subjects, neither drank nor smoked, and rarely went ashore in foreign ports. In 1937, after foreign service leave, he was again drafted overseas and was given a job which he considered inferior to his position as a seaman petty officer—"It was not a seaman's job and I am a seaman." He felt he was wasting his time, and there was "a good deal of messing about" which to him was especially trying. Typical ulcer pain was noticed for the first time in March, 1939. It became worse in August, but he carried on for over a year and was not sent home after reporting sick until June, 1940.

It is difficult to resist the conclusion in this case, as in the other examples, that increased mental tension was a predisposing cause of indigestion and ulcer formation, 14 patients showed some or all of these features. In the remaining 6 no abnormal personality trends were observed.

SUMMARY AND CONCLUSIONS

One hundred naval ratings suffering from gastroduodenal dyspepsia have been investigated with regard to possible ætiological factors.

In the first year of the war the most frequent sufferers appear to have been pensioners and reservists between the ages of thirty and forty. Many of them were serving in destroyers, minesweepers, trawlers and other small auxiliary craft.

Defective teeth and gross dental sepsis were rarely seen, alcoholic excess only occasionally, but hurry over meals and excessive smoking were common features.

Unsuitable food was the usual cause advanced for the recurrence of indigestion by patients who had been accustomed to diet themselves before the war. Their inability to eat the ordinary naval rations probably was the cause of vomiting and of any loss of weight or vitamin-C deficiency they showed.

A small proportion (10%) were the subjects of migraine and in some of these there was evidence of selective food intolerance or allergy.

Although undue anxiety of the simple reactive type was not uncommon, the majority denied all worry and were familiar with the conditions and duties of naval life. In contrast, abnormal personality trends were comparatively frequent, especially towards over-conscientiousness, a sense of frustration and swings of mood with depressive phases.

The general conclusions from these results are much the same as those of Willcox (1940), Payne and Newman (1940), Graham and Kerr (1941), who have investigated the problem in the Army. In sailors, peptic ulcer appears to be the only serious cause of dyspepsia in the present war. Though its occurrence is perhaps not so frequent as in the Army, there is the same lengthy history, and the same tendency to attribute the cause to unsuitable diet. But this experience strengthens the view that psychological factors also play a part in the development of symptoms. How early these influences operate, and whether they are primary or secondary, it is impossible to say, for most of the case-histories were too long to enable one to study the early stages. It was noticed, however, that many patients who had been dieting themselves on instructions received in civil life had had no preliminary investigation. It cannot be doubted that the restrictions imposed were of value to those who had ulcers, but there appear to have been some in whom they were unnecessary. In these patients a conditioned reflex may have been set into operation when they were recalled to the service and forced to abandon their peacetime dietary. Such an effect would make it difficult for them to eat ordinary food without getting pain, and would react on them adversely by increasing the emotional tension

Acknowledgments are due to Surgeon Rear Admiral F J Gowans, C B, for permission to publish the results of the investigation of cases under his care I am also indebted to Surgeon Lieut Commander D M Dean, R N V R, for his help in compiling some of the case notes

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INFLUENCE OF ŒSTROGENS ON EXPERIMENTAL CANINE DIABETES MELLITUS

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THE evidence at present available suggests that treatment of an animal with relatively large doses of œstrogen inhibits the liberation from the anterior pituitary gland of certain of its specific hormones Thus there is reason to believe that the secretion of the pituitary substances concerned with the growth of ovarian follicles, with lactation and with general somatic growth (see Van Dyke 1939 for references) is inhibited under the influence of large doses of œstrogen

As the brilliant researches of Houssay and his school have shown, removal of the pituitary gland, or of its anterior part alone, results in a remarkable alleviation of the intensity of the diabetes produced by extirpation of the pancreas It therefore seemed reasonable to expect that the intensity of the diabetic condition of depancreatised animals would be diminished by treatment with œstrogen, and such was found to be the case by Barnes, Regan and Nelson (1933) for the dog, and by Nelson and Overholser (1934, 1936) for the rhesus monkey

On this experimental basis an extensive series of investigations has developed, indicating that treatment with large doses of œstrogen temporarily alleviates the diabetic condition which may develop in women during or after the menopause, and which may well be due to hyperactivity of the anterior pituitary lobe (see Gessler, Halsted and Stetson 1939, Spiegelman 1940, Cantilo 1941, for recent results and references to earlier investigations)

The recent accessibility of the relatively cheap synthetic œstrogen diethylstilbœstrol (Dodds, Goldberg, Lawson and Robinson 1939) has made an investigation of its influence on diabetes particularly desirable Moreover, treatment with œstrogen can induce hyperplasia of the pancreatic islets in normal animals (Cramer and Horning 1936), an increase in pancreatic-insulin content (Griffiths and Young 1940, Griffiths, Marks and Young 1941) and histological evidence of excessive secretory activity of the islet cells (Vazquez-Lopez 1940) It was therefore conceivable that treatment with œstrogen of dogs made permanently diabetic by a short course of injections of anterior pituitary extract (Young 1937) might result in some repair of the damaged pancreatic islets observed in these animals (Richardson and Young 1938, Richardson 1940), which are presumably not incapable of some degree of regeneration Such regeneration should show itself in a relatively long-lasting alleviation of the diabetic condition

When, as will be seen, negative results were obtained in the present experiments on the influence of diethylstilbœstrol on the condition of the pituitary-diabetic dog (cf Lawrence and Madders 1941), similar investigations were carried out with crystalline œstrone and œstriol

Animals —Experiments were carried out with four pituitary-diabetic dogs, one female and three males, and with one male depancreatised dog In all except one of the experiments with pituitary-diabetic dogs the animals received no insulin, and under such conditions corrected D/N quotients of over 3 were consistently observed during periods when the received a diet of meat only (Young 1938, Marks and Y 1939)

With the pituitary diabetic dogs the experimental m was similar to that adopted in previous investigations dogs were maintained on a diet of horse flesh, of which were allowed and encouraged to eat as much as they w and daily records were kept of the amount of food e and of the amount of sugar, nitrogen and ketone excret the urine In the calculation of the corrected urinary quotient the gross sugar excretion was corrected for the amounts of preformed carbohydrate in the meat consu

During the course of one experiment, pituitary diabetic 116 received daily subcutaneous injections of 10 unit protamine zinc insulin but, as in earlier experiments on same animal and in those with other pituitary diabetic this animal was permitted to consume meat to repletion du this period

With the depancreatised dog, the procedure was ne sarily different because of the lack of pancreatic enzy This animal was maintained on the mixture of raw m raw pancreas and glucose described by Campbell and (1938), together with adequate insulin therapy Under th conditions a large proportion of the ingested meat is absor For assessing the influence of œstrone on the intensity of diabetic condition, the proportion of the total avail dietary carbohydrate retained was calculated in the man described by Marks and Young (1939)

Administration of œstrogens —Since the technique of planting tablets of solid material under the skin (Dean and Parkes 1937) has obvious advantages over the d administration by subcutaneous injection of a solution of material, the former method was first tried When, howe negative results were obtained with this technique s cutaneous injections of a solution of the œstrogen in nut were given daily for five days

Chemical estimations —Urinary nitrogen was determi by Kjeldahl's method, and urinary sugar by that of Bened Urinary ketone, expressed as total acetone, was estimated the Van Slyke modification of the Denigès method, or, wh the amount present was very small, by an approxim colorimetric method

As will be seen from tables I and II, no influence œstrogens on the intensity of diabetes in the pituita diabetic dog, or on that of the insulin-treated depanc atised dog, was observed in these experiments Althou the data are not given in the tables, it was also fou that treatment with œstrogens did not influence t body-weight of these animals, which in all instan was approximately steady

DISCUSSION

The negative results obtained in this investigati of the putative antidiabetic action of œstrogens surprising but nevertheless clear-cut, and the discrepan between these and the earlier experimental results Barnes, Regan and Nelson (1933) and of Nelson a Overholser (1934, 1936) are difficult to explain The dos of œstrogen used in the present investigations are mu greater than those used by the earlier workers, b treatment with such big doses would reasonably expected to give a more effective suppression of pituita function In any case clinical investigations ha demonstrated the necessity of using relatively enormo doses (cf Cantilo 1941) in order to demonstrate th antidiabetic effectiveness of œstrogens in postmen pausal diabetes, but even so, Lawrence and Madde (1941) have observed negative results with large doses *diethylstilbœstrol*

The pituitary-diabetic dog receiving an unlimited di of meat was observed by Marks and Young (1939) respond to the administration of a small dose of insul by a striking diminution in ketonuria, even though th D/N quotient might be only slightly affected This borne out by the data for the various control periods f dog 116 in table I of the present paper, which illustra the effect of giving 10 units of protamine zinc insul to this animal The administration of diethylstilbœstro on the other hand, had no effect, on the average, on th ketonuria of the pituitary-diabetic dogs, while œstron tended to increase it (table I) It is possible that th administration of œstriol to dog 115 resulted in a signi ficant *rise* in the D/N quotient, although the result o this single experiment cannot be taken as conclusive

TABLE I—EFFECT OF TREATMENT WITH ŒSTROGENS ON INTENSITY OF DIABETES IN PITUITARY-DIABETIC DOG

Data are average values for the various periods

No and sex of animal	Treatment	Control period (7 days)				Period of treatment				Period after treatment (7 days)		
		Glycosuria (g /day)	Corrected D/N	Ketonuria (g /day)	Length of period (days)	Total œstrogen absorbed (mg) (approx)	Glycosuria (g /day)	Corrected D/N	Ketonuria (g /day)	Glycosuria (g /day)	Corrected D/N	Ketonuria (g /day)
	(a) Diethylstilbœstrol											
112 M	Three 15 mg tablets subcutaneously	162	3 25	0 44	7	85	169	3 54	0 70	141	3 45	0 46
112 M.	Twenty 15 mg tablets subcutaneously	139	3 31	0 76	7	50	118	3 24	0 65	124	3 55	0 43
116 M		55	3 47	1 01	7	50	58	3 11	0 75	56	3 26	0 57
115 F	10 mg subcutaneously in oil daily	69	3 34	0 02	5	50	70	3 12	0 02	63	3 13	0 08
116* M		87	2 41	0 05	5	50	77	2 81	0 07	90	2 99	0 16
	Average	*102*	*3 16*	*0 46*			*98*	*3 16*	*0 44*	*95*	*3 28*	*0 34*
	(b) Œstrone											
111 M.	Seven 10 mg tablets subcutaneously	88	3 30	3 20	7	21	122	3 32	3 80	104	3 32	2 92
112 M	5 mg subcutaneously in oil daily	104	3 49	0 44	5	25	86	3 26	1 33	97	3 26	0 34
116 M	10 mg subcutaneously in oil daily	44	2 88	1 01	5	50	20	2 89	1 49	49	3 40	0 76
	Average	*79*	*3 22*	*1 55*			*76*	*3 16*	*2 21*	*83*	*3 33*	*1 34*
	(c) Œstriol											
115 F	10 mg subcutaneously in oil daily	90	2 82	0 13	5	50	57	3 07	0 15	49	3 45	0 10

* Given 10 units protamine zinc insulin daily

Janes and Nelson (1940) found that rats which were treated daily with diethylstilbœstrol contained more glycogen than control animals, possibly indicating a stimulation of glyconeogenesis by this œstrogen. That the formation of glycogen can be stimulated during fasting by œstrogens appears certain from the results of Griffiths, Marks and Young (1941), although the source of the new carbohydrate is not clear If such stimulation of gluconeogenesis occurs when the diabetic animal is treated with œstrogens a rise of D/N quotient would not be expected unless some part of the newly formed sugar came from fat, but of this there is no clear evidence in the present experiments

TABLE II—INFLUENCE OF TREATMENT WITH DIETHYLSTILBŒSTROL ON CARBOHYDRATE RETAINED BY INSULIN TREATED DEPANCREATISED DOG

(Dog 108, male, receiving 40 units insulin per day)

Treatment	Control period (7 days)			Period of treatment (7 days)		Period after treatment (7 days)	
	Glycosuria (g /day)	Carbohydrate retained (%)*	Total amount absorbed (mg) (approx)	Glycosuria (g /day)	Carbohydrate retained (%)*	Glycosuria (g /day)	Carbohydrate retained (%)*
Two 15 mg tablets subcutaneously	28	73	5	32	68	26	70
Twenty 15 mg tablets subcutaneously	29	72	50	40	61	36	66

* Percentage of total available

Although œstrogens can increase the amount of pancreatic tissue in the intact mouse or rat, the negative results of the present investigation do not support the idea that any regeneration has occurred of the damaged islets of the pituitary-diabetic dog

SUMMARY

The administration of large doses of pure œstrogen (œstrone, œstriol and diethylstilbœstrol) to 4 pituitary-diabetic and 1 depancreatised dog was found to exert no obvious antidiabetic action In fact, with œstrone and œstriol the effect was pro- rather than anti-diabetic

The reasons for the differences between these results and those of other investigators, who have successfully treated with œstrogens both experimental pancreatic diabetes in the dog and postmenopausal diabetes mellitus in women, are discussed

I wish to express my gratitude to Messrs Parke Davis & Co , Organon Laboratories, and Messrs Boots for gifts of œstriol, œstrone and diethylstilbœstrol respectively

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HUMAN DIABETES TREATED WITH ŒSTROGENS

BY

R D LAWRENCE,
M D ABERD F.R C.P.
PHYSICIAN IN CHARGE

KATE MADDERS,
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THE attempt to treat diabetes with œstrogenic substances seems a logical outcome of experimental facts concerning the relation of the pituitary to carbohydrate metabolism It is known (1) that saline extracts of the anterior pituitary can produce diabetes, at least in dogs (Young), (2) that the decrease of œstrogens at the menopause is accompanied by an increase in pituitary activity, which can be checked by œstrogen injections, and (3) that there is a particularly high incidence of diabetes in women at the menopause which it is tempting to ascribe to increased pituitary activity Both in animals and man diabetes has already been treated by œstrogens and variable results claimed In 1939 Gessler and others (who review the literature) injected 50,000 international units of œstradial-benzoate daily into five diabetic women and claimed improvement in three and relapse after stopping the injections , doses of 20,000 I U gave no results Spiegelman (1940) claimed that 10,000 I U injected twice a week reduced the insulin requirement of nine diabetic women by some 40% and that omission of injections was followed by increased insulin need Cantilo (1941) has just published results in forty diabetic menopausal women and claims that œstrin and progesterone have been successful in every case in controlling the diabetic state, but the details he records are so scanty and his sugar-tolerance tests so impossible that this paper must be neglected as serious evidence Any clear improvement has been temporary and obtained by injections, so that there is no obvious advantage over insulin Now, however, synthetic stilbœstrol is available, orally active and cheap, and it is important to see whether it can help in the treatment of diabetes

RESULTS OF TREATING FIVE FEMALE DIABETICS WITH 4 MG OF STILBŒSTROL DAILY FOR 8 WEEKS

Case	Age (yr)	Stilbœstrol				Results
		Before		During and after*		
		Insulin (units)	Blood sugar (mg %)	Insulin (units)	Blood sugar (mg %)	
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* *Dosage and blood sugar determinations after the course of treatment are in italics*

Early in 1939 it was planned at King's College Hospital to try the effect of stilbœstrol on fifty outpatient diabetic women of menopausal age The experiment had been completed on only five before the war dispersed many of our patients and made careful and standardised observations on most impossible Recently we discovered that Young had made similar studies on his pituitary-diabetic dogs and both observations, although few in number, are so uniformly negative as to warrant confidence in publication They at least establish the failure of œstrogens (stilbœstrol) in diabetes

The effects on the five women are shown in the table All were treated as outpatients, but their diet, conditions of life and insulin dosage were reasonably stable and closely observed before and during treatment For 8 weeks they were given 1 mg of stilbœstrol by mouth four times a day, sufficient to ensure a continuous action without toxic effects Changes in the diabetic condition were judged by general health, by urine tests for sugar and ketones and by blood-sugar estimations carried out in a constant time-relation to food and insulin Some cases showed slight changes, for better or worse, but not outside the minor variations always occurring in diabetes

We conclude that the dosage given had no demonstrable effect on the diabetic condition

SUMMARY

Five women diabetics of menopausal age were given 1 mg of stilbœstrol four times daily for 8 weeks The changes noted were not greater than the normal variations in diabetics

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Reviews of Books

Surgery of Modern Warfare

Part IV Edited by HAMILTON BAILEY, F R C S Edinburgh E and S Livingstone Pp 481-640 12s 6d

THIS volume contains accounts of wounds of bone and joints, plastic surgery and injury to the eye Mr. Hamilton Bailey defends the contradictions to which reviewers of previous volumes have drawn attention , they have not, he maintains, crept in by mistake but are expressions of differences of opinion Such divergencies are admittedly stimulating and tend to keep our ideas fluid, but contradictory advice on identical problems is out of place in a book which seeks to be authoritative For instance, in the first of the two chapters on amputations the author maintains that the surgeon must be given a free hand in determining the site for amputation and that the instrument maker must do the best he can with the stump provided , in the second, this advice is flatly contradicted and close collaboration between surgeon and limb fitter is advised so that the amputation is performed at a site satisfactory for the fitting of a prosthesis Surgeons with special experience of amputations will endorse the latter view but they will not require instruction on this problem What of the surgeon with some experience of general surgery but without special experience of war-time surgery, for whom, we are told, this book is written ? After reading these accounts his ideas may still be fluid, but it is a fluidity in which he is left to sink or swim without a life-line In the section on bones and joints there is a valuable discussion on amputation in cases of compound fracture Here the indications are clearly set out and a table is included showing why amputation is so commonly considered in fractures of the lower limb and so rarely necessary in fractures of the arm Exception might be taken to the statement that in excision of the elbow " the ulnar nerve is dissected carefully and retracted out of harm's way " In this operation (which is performed subperiosteally) the ulnar nerve should not be seen There can be no quarrel with the statement that " to apply a hip spica properly requires as much training and experience as to perform a gastrojejunostomy correctly " A plea is entered for brachial-plexus block to avoid shock in operations on the arm, and injection of 10 c cm of 1% Novocain is advised If a satisfactory block can be obtained with this small amount of solution no doubt this type of anæsthesia is suitable for controlling shock On the other hand, the method is not to be recommended unless the surgeon has special experience of it , in most hands at least 30-40 c cm of 1% novocain are required to give perfect anæsthesia, and injection of this quantity often causes a fall in blood-pressure

There is an excellent account of sequestrectomy and the methods of dealing with chronic bone infection Wounds of the face are discussed clearly and authoritatively, and the success of this chapter is largely due to the fact that the whole of a reasonably wide field has been entrusted to a single authority The section dealing with the eye will prove of great value to those general surgeons who are of necessity exploring a little known realm for the first time

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THE fourth volume of the new edition of " Thorpe " continues the stately march forward of the previous three, and is of the same high standard It is to be hoped that the sad loss of Sir Jocelyn Thorpe will not retard the appearance of the next volumes There are revised articles on emetine, ephedrine, ergosterol and ergot of rye and 17 pages deal with disinfectants from the widest aspect The longest articles, which rank as monographs, are on dyeing, azo-dyestuffs and explosives , the last, and those on ensilage and feeding-stuffs match our times There is a short, sound and practical account of ethyl ether by Mr A J Ewins It is a pity that the great subject of enzymes has to be dismissed in five pages

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THE LANCET

LONDON SATURDAY, MAY 10, 1941

THE SHORTAGE OF DOCTORS

THE announcement that the American Red Cross have been asked to send us a thousand doctors for the Services and the E.M.S. seems to have surprised some medical men and women in this country. It has perhaps not been fully realised outside Government departments and the medical war committees who are acting as their agents that the flow of new entrants to the profession, balanced by the inevitable losses through age, sickness and death, is insufficient for the needs of the expanding Armed Forces, the greatly developed civil hospitals in which the E.M.S. is incorporated, civil defence, and the medical care of the civilian population especially in the areas to which large sections of town people have been transferred. War spells waste in medicine as in any other field of human activity. It may seem absurd that the removal from civilian life of a moderate proportion of men and women at a stage of life when sickness and mortality are comparatively light should necessitate the transfer to the Forces of a much higher proportion of the available medical men and women. But when a country takes its young men and women into services which expose them to special dangers it must make special provision for their care. The Navy, Army and Air Force must have medical staffs familiar with their ways and sufficient in numbers and ability to meet the emergencies which can be reasonably foreseen, to train their lay assistants, and to be responsible for preserving and promoting the health of their units as well as treating the illnesses or accidents which arise from day to day. In times of stress, too, the mere presence of a medical officer helps to maintain morale. For all these reasons it is not possible to compare strictly the proportion of medical practitioners to lay personnel required in the Services with that which is adequate in civil life, and medical practitioners joining the Forces cannot expect to be fully occupied all the time in the same pursuits as in peacetime practice.

The complaint is sometimes heard from doctors that they have offered themselves to the Services or the E.M.S. without response. There are indeed strange instances of this anomaly. Men born in this country of parents who were nationals of lands now overrun by Germany have been rejected for no other obvious reason and the Services seem to have been reluctant to employ friendly aliens though they appeared to be competent, loyal and proficient in the English language. In some such cases there may have been incommunicable justifications, but there is ground for the suspicion that Service departments have been playing for safety to an extent which is not permissible in these hard times. Medical men and women with special training and experience have expressed disappointment that no place has been found for them in the national effort, but it has to be remembered that special places are limited and are not found quickly. Elderly practitioners have also wished to serve within the limitations of their capacity and inclinations which are not easy to meet in such a time of upheaval. The essence of the situation is that young doctors with some hospital experience are most in demand for the three Services and the E.M.S. and that the shortage is particularly in this age-group. So far it has been partially overcome by taking more of the older men away from practice than can safely be spared. Only to a small extent has relief been found by using senior medical students as house-officers, as the Ministry of Health has now rather tardily suggested, an expedient which might improve medical education if it were wisely effected. The E.M.S. and the civil hospitals generally, which have had great difficulty in coping with the actual potential increase in the strain of war-time on their personal resources, must adjust themselves to conditions far short of the ideal and perhaps work at a lower level of efficiency.

The position would be eased if the demands of the Services could be reduced. There is evidence that they are not always using their medical personnel to the best advantage, that overlapping might be saved by combining the three medical services in one area, and that more use could be made of local practitioners and the staffs of existing emergency hospitals to release Army doctors now held in readiness for emergencies. It seems doubtful, also, whether it is necessary to retain every medical man who has been trained in an ambulance unit until that unit is sent abroad or called into action at home. These questions require closer and more continuous attention than the Robinson Committee was able to give them during its short session, though its recommendations[1] seem eminently sound, more especially the last, which urged the establishment of "an effective organisation for the settlement of questions of priority." Whatever the answers may be, the aid from America will certainly be needed and most cordially welcomed, but it is our duty to see that these keen young men who cross the Atlantic are protected from the dissatisfaction and boredom which has been repeatedly expressed not only by our own practitioners but also by those who have already joined us from the Dominions. Not long ago the Prime Minister, to whom we appealed in our leading article of March 1, said that the Armed Forces generally might have to "comb their tails." It will be no easy task for the medical branches of the Services to reorganise themselves at the same time as they have to meet increasing demands by the fighting establishments, but they must promptly face the problem or seek the assistance of others who can take some of the burden off their shoulders.

PITUITARY EXTRACT IN OBSTETRICS

PITUITARY extract is a powerful weapon which handled incautiously in labour may prove a danger to mother and child. When first introduced into obstetrics its strong stimulant action on the parturient uterus won it a ready popularity. The pioneers—BLAIR BELL, DE LEE and HOFBAUER—were careful to stress its indications and limitations, but later enthusiasts were soon using it in doses and conditions that would have shocked them. Disaster followed. for the mother, uterine tetany and rupture ;

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[1] Given by Mr Ernest Brown in answer to a question in Parliament. See THE LANCET, May 3, 1941 p 587

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virus for another plant virus giving rise to the condition bushy stunt has been obtained in true rhombic crystals.[3] The estimated dimensions of the units of the tobacco mosaic virus have recently been substantiated in a remarkable manner by the use of the electron microscope and these results are summarised by STANLEY in his address.[4] That the virus units are rod-shaped has been confirmed and their dimensions have been measured and found to be about 18 mμ in diameter and about 280 mμ in length; the ability of the virus units to aggregate themselves end to end in long chains has also been confirmed.

Although it has been possible for some time to follow variations of a virus in the laboratory it is only recently that it has appeared possible to initiate changes experimentally. The results of ROSS and STANLEY[5] showed that the activity of the tobacco mosaic virus could be suppressed by masking the amino-groups of the protein by treatment with formaldehyde and that the process could be reversed with a recovery of the virus activity. The modified virus still possessed serological activity although no longer capable of producing the disease. These investigations are being continued and STANLEY makes the suggestion that as our knowledge of the architecture of viruses increases it may become possible to produce in the laboratory new or useful forms of viruses which may have fundamental medical importance. He goes on to discuss the possible initiation of pathological conditions by the mutation of a masked or latent virus or by changes in the host cell which become favourable to the virus. The dependence of virus growth on the state of cell nutrition is well shown by the work of SPENCER[6] on the production of tobacco mosaic virus in plants receiving different amounts of nitrogen and on the effect of nutrition on their susceptibility to infection. The ability of viruses to enter into the metabolic changes within the cell has attracted many workers to the idea of a direct relationship between virus activity and malignant changes although the mechanism of the inception is still obscure. It is by no means evident that all the entities covered by the name virus will submit to investigation as readily as the plant viruses—indeed differing degrees of complexity appear possible. For example it has not yet been found possible to obtain vaccinia virus or Rous sarcoma virus entirely free from fatty material,[7] and enzyme activity has been found associated with the former virus.[8] If these differences are real they merely serve to emphasise the gradual increase in complexity and function as one passes up the series from the simpler proteins to the enzymes, the plant viruses and the animal viruses and from them to the smaller of the more generally accepted organisms. STANLEY concludes that the property of life is inherent in all matter.

DR G. L. GULLAND who died in Edinburgh on May 4 at the age of 79 was one of the big clinicians of his time. He held the chair of medicine in the university and became president of the Royal College of Physicians of Edinburgh, while spending his life in the service of the Royal Infirmary.

Annotations

GASTRIC ACIDITY IN INFANCY

IN the innumerable studies of gastric secretion made in the last twenty years the first month of life seems to have escaped attention. This gap has now been filled by R. A. Miller[1] of Edinburgh. In 50 healthy mature breast-fed infants the fasting juice was withdrawn seven hours after a feed for the first ten days of life. In addition, to obtain figures for the eleventh to thirteenth day, fasting juice was taken from any healthy infant in this age period who was detained in hospital. Expressed as N/10 HCl per 100 c.cm. of stomach contents the average total acidity was nearly 40 c.cm. on the first day of life, thereafter it fell to only just over 11 c.cm. by the tenth day, and then rose steadily to about 18 c.cm. by the end of the month. There was at first great variation between the maximum and minimum amounts of free acid, but after the seventh day the free acid fell to zero in most of the infants. The maximum acidity in the fasting juice, reached within 48 hours of birth, averaged in the 50 infants 21.6 c.cm. N/10 HCl for free acid and 45.9 c.cm. for total acid. As Miller points out this is astonishingly high for it is equivalent to that of a healthy adult and is not again reached in childhood until the age of three years. To explain the high acidity in the first few days Miller suggests that some gastrogenic hormone reaches the infant either from the mother or the placenta, and that the influence of this secretogogue vanishes leaving the infant to control its own gastric digestion, by the tenth day of life. It would have been useful to compare the figures for infants with those of their mothers at the time of delivery, but practical considerations ruled this out. There is, however, evidence that the mother's gastric acidity, low during pregnancy, rises towards the normal adult figure as delivery approaches, and Miller concludes that the infant's gastric acidity at birth may bear a close similarity to that of the mother. Such a relationship is also suggested by his finding of achlorhydria in 6 of the 50 newborn babies, for other workers found this deficiency in 3 out of 24 mothers, an almost identical proportion. The fact that achlorhydria was found in these infants may make others besides pædiatricians revise their ideas, for most investigators have declared that free acid is always present in the fasting juice of the unfed infant at birth, and have denied the existence of congenital anacidity. Histological examination by Miller of the stomachs of 10 infants who had died within 8 days of birth showed that the heavier a baby is at birth the better is its gastric mucosa developed, but there was one exception, a mature infant in which the mucosa was hypoplastic. Whether such persistent hypoplasia ever produces a congenital achlorhydria cannot be decided, as Miller says, without further investigation. If it does the atrophic gastritis demonstrable in adults with achlorhydria may sometimes be a sequel of this condition.

HOSPITALS IN AIR-RAIDS

IT is perhaps natural that a good deal of publicity is given to bombs falling on hospitals, but its effect may well be to give a distorted view of the risks run by the inmates, staff and patients, and lead to a reluctance on the part of the latter to enter them for necessary treatment. Most hospitals are large buildings occupying much space and with indiscriminate night bombing it is inevitable that they will receive a share of the attack. From the point of view of relative risks the moot point is whether they in fact receive more than their fair share, or if they do not whether they are more susceptible to their fair share than other buildings. With really indiscriminate bombing it would be inconceivable for them to receive an undue proportion of bombs (except by an for the baby, intracranial damage and asphyxia Appreciation of these dangers led the cautious and conservative to condemn its use in obstetrics altogether, but others still employ the drug to hasten the process of delivery in the first and second stages of a normal labour The extreme attitudes whether of acclamation or condemnation are indefensible and bring pituitary extract into unfair dispute In order to clarify the position—it is hoped for all time—the section of obstetrics and gynæcology of the American Medical Association have made it the subject of a symposium [1]

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[3] Bawden and Pirie *Brit. J. exp. Path.* 1938, 19, 251.
[4] *Science* Feb. 14, 1941, p. 145.
[5] Ross, A. F. and Stanley, W. M. *Proc. Soc. exp. Biol. N.Y.* 1938, 38, 260; *J. gen. Physiol.* 1938, 22, 165.
[6] Spencer, E. L. *Plant Physiol.* 1939, 14, 769.
[7] Pollard, A. *Brit. J. exp. Path.* 1939, 20, 429.
[8] McFarlane, A. S. and Salaman, M. H. *Ibid*, 1938, 19, 184.

[1] *Arch. Dis. Childh.* March, 1941, p. 22.

Even in these enlightened days of exact assay, there are on the market a number of pituitary extracts which may vary in the strength of their action on the uterus Individual idiosyncrasy is not unknown and uterine tetany has been reported after doses as small as one unit Most preparations are capable of inducing side-effects apart from a purely oxytocic action, and these include pressor and antidiuretic action and anaphylaxis, the loose term pituitary shock shows that we are aware of these unwelcome results Moreover it is believed that the action of pituitary extract may be cumulative and that a small original dose may sensitise the uterus to respond abnormally to the same amount given later The action of the drug has of late been widely studied in vivo by means of the tocodynamometer, an instrument that records graphically the behaviour of the uterus in labour Even small doses prolong uterine systole, shorten diastole and induce a state of minor tetany This increase of muscular tone may produce a placental ischæmia so effectively as to jeopardise the proper oxygenation of the fœtus, thereby causing intrauterine distress and even death At best the violence of the contraction results in a rapid moulding of the fœtal presenting part, with the consequent risk of intracranial damage Such damage, may not necessarily result in stillbirth, but it is a potent cause of neonatal ill health and permanent damage to the child's brain Nor must the maternal aspect be forgotten apart from the grosser lesions of uterine and cervical rupture there is the damage to the muscular, fascial and ligamentous supports of the uterus, with all the evil sequelæ of prolapse and pelvic ill health in years to come These are some of the dangers of what DE LEE picturesquely calls "a stream-lined labour"

There are, however, certain well-tried scientific indications for the use of pituitary extract in obstetrics First, in the abortions of early pregnancy to avoid or assist surgical evacuation of the uterus, secondly, in the medical induction of labour, with castor oil and sometimes quinine, provided that only small (1 unit) doses are used at 30 minute intervals up to a maximum of 10 units and that the drug is stopped immediately the uterus responds, thirdly, in uncomplicated cases of primary uterine inertia—that is, where there is no disproportion or malpresentation, fourthly, in certain cases of abruptio placentæ or atonic antepartum hæmorrhage, again in small carefully observed doses, and fifthly, in atonic postpartum bleeding, where it may be given in larger doses, intravenously or directly into the uterine muscle Comparable to this last is its use in cæsarean section after delivery of the child and placenta Apart from these well-defined and properly defensible indications pituitary extract should never be employed in obstetric practice, above all it must on no account be used to hasten the processes of normal labour in the first and second stages As a prophylactic after delivery of the placenta a dose of ergot extract or an ergometrine tablet by mouth has a more prolonged effect than a pituitary injection, is cheaper and avoids the risk of "pituitary shock"

WHERE TOBACCO MOSAIC HAS LED US

MUCH of the remarkable advance made in the last few years in our knowledge of the viruses has been due to the stimulus of W M STANLEY's work on the virus of tobacco mosaic, which he was the first to show could be obtained as a crystalline protein material This finding, although strongly criticised by many, has been upheld by later work and has in fact encouraged the investigation of virus problems by specialists in all fields of study Its importance has lately been recognised by the presentation of the gold medal of the American Institute of New York to Dr STANLEY Viruses in general had long been considered to be living organisms, albeit of a specialised type, and the identification of a virus as a protein, or as was shown by BAWDEN and PIRIE[1] a nucleoprotein, prompted the immediate criticism that the protein was merely an impurity carrying the actual virus This contention has so far received no support from later work, no separation of the characteristic nucleo protein and the virus activity having yet been achieved by chemical or physical methods Ultracentrifugal and electrophoretic analyses have indicated that the material is homogeneous, but solubility studies now show that such preparations may contain fractions of varying solubility but which all possess the same infectivity The suggestion has accordingly been made that the virus is better described as a family of closely related substances rather than as one individual This point of view receives some support from variations in the virus which have been noticed in other work, for mutant strains have been isolated from plants inoculated with a single infectious unit of the ordinary strain More noticeable differences have been found in the nucleoproteins isolated from plants infected with different strains of the virus, which although showing very similar properties yet show slight characteristic differences It is probable that these differences lie chiefly in the protein component, for the nucleoproteins giving rise to tobacco mosaic, latent mosaic and tobacco ring spot give very similar nucleic acid absorption spectra, but the spectra for the protein components are different and characteristic for each virus Following shortly upon STANLEY's original isolation of the tobacco mosaic virus and the isolations by the English workers, X-ray studies were published by BERNAL and FANKUCHEN[2] which showed that Stanley's crystals should more strictly be termed "para crystals," as they were apparently made up of units with a diameter of 15 mμ and a length exceeding 150 mμ and packed longitudinally with regularity in two dimensions only This finding, however, in no way vitiates the idea of a crystalline glimpses behind the scenes The publishers commend the book to students of human nature, but apart from references to the generosity of the poor, on the one hand, and to the ease with which medical evidence can be bought on the other, there is little about the effect of social conditions on human conduct or crime An author with such obvious qualifications might well have said more about the psychology of criminals Even if, as he believes, English prisoners are more comfortable than any in the world it is important to know why so many second (not first) offenders subsequently find little inspiration or aptitude for normal life Perhaps the fact that Mr Oddie took his medical training in Edinburgh has something to do with his scrupulously objective attitude

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[1] Sharkey, J A *J Amer med Ass* Oct 19 1940, p 1315 Pendleton, G I *Ibid*, p 1318, de Lee, J B *Ibid*, p 1320

[1] Bawden, F C Pirie, N W Bernal, J D and Fankuchen, I *Nature, Lond* 1936 138, 1051

[2] Bernal, J D and Fankuchen, I *Ibid*, 1937, 139, 923

PHONOCARDIOGRAPHY

IN spite of the modern ring about the name it is nearly fifty years since the first investigations on phonocardiography were carried out by Fredericq[1] It is still regarded by many clinicians as one of those extras which may amuse laboratory workers but are of little help to the patient Orias, Braun-Menendez[2] and Mannheimer,[3] however, have demonstrated the practical value of this way of investigating the heart-sounds Two methods have been used in the past direct phonocardiography and phonocardiography with electrical amplification In direct phonocardiography the vibrations of the chest wall are magnified by optical means and recorded on a screen or moving film, this method, which has been used by Wiggers and Braun-Menendez, involves the use of a suitable membrane and will only record frequencies between 30 and 150 cycles per sec These disadvantages are partly offset by the avoidance of electrical disturbances In phonocardiography with electrical amplification, which has been adopted more generally in Europe and America, the vibrations of the chest wall caused by the sounds of the heart are registered by a microphone in which corresponding electrical vibrations are produced, and these in turn are transferred by an oscillograph to a moving film Mannheimer uses what he calls calibrated phonocardiography, in which the sounds are split up according to their pitch and amplitude By distinguishing six different frequency ranges (up to 1000 cycles per sec), and by simultaneous registration of the sounds within the different frequency ranges, it is possible to analyse the heart sounds and discriminate between fundamental tones and overtones This method also has the advantage of eliminating electrical disturbances to a great extent By means of a calibrated microphone the amplitudes of the sound phenomena can be read off in units of pressure (dynes per sq cm) and thus it is possible to obtain comparable results in different people and the same person at different times

Phonocardiography has been of greatest value in relation to the third and fourth heart sounds The third sound is seldom detected on auscultation because of its almost complete lack of overtones Mannheimer, confirming the work of others, found it present in some 70% of normal children and also recorded it in 6 out of 17 infants under one year It is now generally conceded that this sound is the result of vibrations set up in the ventricular wall by the rapid inrush of blood from the auricles, it occurs 0 08–0 18 sec after the second sound The fourth, or auricular, heart sound is also rarely heard on auscultation, again because of its lack of overtones It can be recorded by the phonocardiograph in most normal people, and comes at the end of diastole, 0 02 sec before the Q wave in the electrocardiogram and 0 07 sec before the first heart sound Both the third and fourth sounds can be differentiated from reduplication of the second sound because they come much later in diastole Phonocardiography records a systolic murmur in almost all children, although it can be heard in only about a third of them, and the phonocardiographic record detects no difference between the audible and the inaudible murmurs This confirms the clinical dictum that soft systolic murmurs are in themselves of no significance, only when they increase in intensity or alter in character can they be regarded as pathological In children variations in amplitude of the heart sounds at different ages are evidently largely dependent on the thickness of the chest wall A relationship between the amplitude of the first sound and the heart-rate has been demonstrated which probably accounts for the increased intensity of the first sound after exercise, the greater amplitude of the first sound with the child in the erect as compared with the recumbent position also largely depends on the increased heart-rate

Mannheimer has made a phonocardiographic study of 90 patients under seventeen years with congenital heart disease He found that in these youngsters the first and second sounds have a bigger amplitude than usual, principally owing to the increased heart rate, while the third sound has a smaller amplitude and the fourth sound shows no appreciable change from the normal In 90% the systolic murmur was not only stronger but also reached higher up the tonal scale than in health In cases of patent ductus arteriosus the continuous murmur was always recorded, but it was often described as a systolic murmur on auscultation In 23 children the phonocardiogram showed the first sound to be accentuated, but in only 1 of these was the accentuation detected clinically, the comparable figures for accentuation of the second sound were 32 and 11 Gallop rhythm was never detected on auscultation, but by means of phonocardiography some abnormal third and fourth sounds were recorded Calibrated phonocardiography clearly removes many of the disadvantages inherent in methods of recording the heart-sounds, and with its aid we should be able to assess the precise significance of changes in the heart-sounds in myocardial failure, of reduplicated sounds and of gallop rhythm It may also help in the diagnosis of cardiac aneurysm by revealing changes in the heart-sounds or typical murmurs at a stage when neither auscultation, radiology or electrocardiography can detect anything abnormal

RESPECT FOR THE INJURED HEAD

EVEN in trivial head injuries elementary principles of surgical technique must be observed if healing is to be satisfactory On our opening page McKissock and Brownscombe record dismally that of 27 men with scalp wounds operated on before reaching the neurosurgical centre primary healing occurred in 2 only This result is attributed to inadequate attention to simple points The hair was removed only in the immediate vicinity of the wound, splintered bone and even foreign bodies were left behind, the edges of the wounds were not excised completely or cleanly, and the scalp was sutured with one layer of silkworm-gut only Cairns[1] has seen similar unhappy results which he traces to exactly the same faults, and he reports a fatal case of abscess formation following perfunctory cleaning of a scalp wound He says that the most common mistake is to regard the repair of a scalp wound as a minor procedure to be performed in an aid-post or a casualty room, and that from the point of view of conserving man-power cleaning and closing a scalp wound is much more important than removing a foreign body from the brain He urges full aseptic precautions, careful exploration and excision under adequate anæsthesia, the local use of sulphonamides, and closure in two layers The subsequent management of head injuries is of equal importance McKissock and Brownscombe confirm the statement of Russell and others that subarachnoid bleeding unfortunate play of chance), with an aimed attack their risks would be enhanced by their proximity to industrial targets, by enemy pilots mistaking them for such, or by deliberate attacks on them Many of them being old buildings they might react unfavourably to the bombs they received The Minister of Health has recently answered both questions in the negative Hospitals, he said, run no more risk of damage than other buildings and the damage they have incurred has in the main been slight Indeed he goes further in concluding that the elaborate precautions taken to meet the conditions of heavy raiding have made the risk inside the hospitals less than those outside To measure the risks of a particular community must be difficult and the Minister's figures lack the comparison with what the statistician calls control groups For instance, of the staffs of the 400 London hospitals 3 doctors have been killed and 8 injured, 40 of the 5000 nurses have been killed and 124 injured, 15 porters and other lay staff have been killed and 76 injured The figures for nurses are the most useful for only with them is the population at risk given Their death rate since September has, on this basis, been 8 per 1000 and their casualty-rate, fatal and non-fatal, 33 per 1000 How do these figures compare with the rates for the general population? There is no yardstick by which the assessment can be made Similarly, taking the receiving hospitals in Greater London, 115 patients have been killed since last September, during which time over 80,000 sick and injured people have passed through them Here we cannot calculate a death-rate, for this turns on the average duration of the patient's stay in hospital, but on the whole the figures seem reassuring and to substantiate the Minister's claim that the risks have not been unduly large and should not deter people from seeking medical attention Clearly the desideratum is treatment outside heavily attacked areas, and a senior officer of the E M S added a welcome rider to Mr Brown's statement when he said that since September 80,000 ordinary sick patients have been transferred from London hospitals to hospitals outside

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[1] *Zbl Physiol* 1892 6, 257

[2] Orias O and Braun Menéndez E The Heart sounds in Normal and Pathological Conditions, 1939 London

[3] Mannheimer, I *Acta pædiatr, Stockh* 1940 28, suppl 2

[1] Cairns, H *J R Army med Cps* January, 1941 p 12

POSITIVE SYPHILITIC TESTS IN HEALTHY PEOPLE

WITH most diagnostic serological tests there is no sharp line between normal and abnormal results In practice the result is regarded as positive if it exceeds an arbitrary level which really represents a compromise between the antagonistic demands of specificity on the one hand and sensitivity on the other The higher that arbitrary level is fixed the less likely it is that any sera other than those of patients suffering from the particular disease in question will give a positive result, so that the test becomes more specific, but as the level is raised an increasing proportion of patients with that disease may fail to give a positive result, so that the test becomes less sensitive It follows that absolute certainty in diagnosis cannot usually be attained by such tests, though often it is possible to achieve a sufficiently high degree of probability to make them of great practical value These considerations probably apply to serological tests for syphilis, but in this case the arbitrary level has been fixed by variations in technique instead of being expressed quantitatively Sachs[1] reminds us that in the early days of the Wassermann reaction positive results were not uncommonly recorded in non syphilitic persons, and although by modification in technique the tests have since been made more specific, so that now they are among the most reliable of laboratory investigations, it seems not unreasonable to suppose that a very small proportion of healthy people may still give positive results This is perhaps all the more likely because various kinds of healthy animals, particularly cows, are known often to give positive reactions[2] It is extremely difficult to find out what the proportion is because it is certainly so small that very large numbers of healthy people would have to be investigated, and also because there must always be the possibility of latent syphilitic infection in any who give positive reactions These difficulties are acknowledged by Eagle,[3] who reports the results of such an investigation Serological tests were performed on 40,545 college students in a number of different laboratories in America, apparently by various techniques which are stated to represent a fair cross section of current serological practice in the country at large Tests giving positive or doubtful results were repeated, 40 of the 73 initially positive and 22 of the 117 initially doubtful results being confirmed Clinical evidence suggesting the possibility of syphilitic infection was obtained in 21 of the 40 students with confirmed positive reactions and in 5 of the 22 doubtfuls The remaining 19 positive and 17 doubtful reactors gave no evidence of syphilis, nevertheless it is probable that at least some of them were really cases of latent syphilis because they mostly occurred in colleges where the incidence of syphilis was greatest As a result of statistical calculations Eagle considers that 26 of them may be accounted for in this way, leaving only 10 students with confirmed positive or doubtful serological tests for syphilis but no other evidence of such infection

These results are hardly likely to lessen our confidence in the reliability of serological tests for syphilis, since the proportion of healthy persons giving positive or doubtful reactions appears at most to be about 1 to 4000 and even these may all have been cases of latent syphilis It is wise to remember, however, that a larger proportion of patients suffering from miscellaneous diseases other than syphilis might give false positive reactions, because according to Sachs any person with an increased sedimentation-rate is more liable to give such a reaction than a normal person The question whether an absolutely healthy person ever gives a positive reaction if technical errors are excluded remains unanswered, but Eagle tells us that an attempt is being made to distinguish any such "biologic false positives" from cases of latent syphilis The positive reactors discovered in his investigation obviously provide good material for such an attempt

A CORONER LOOKS BACK

Mr Ingleby Oddie's "Inquest"[4] is not so much an autobiography as a selection of his case records collected during 38 years, first at the bar and then as a London coroner Mr Oddie is fortunate in his subject—human degradation is always popular—and most of the cases he describes being victims of such household names as the Ripper, Steinie Morrison and Crippen are, in medical jargon, sufficiently unusual to be worth recording It is not enough to have something worth saying, for even the worst newspapers have that, but to say it well, as Mr Oddie does, and to avoid melodrama and false embellishment, is good workmanship His stories tell their own tale, his effects come from plain records of speech and action and the emotional monotone is broken only by the actual voice of the victim or the seemingly inconsequential remark of a condemned man Inevitably he recalls De Quincey, he has the crime æsthete's gusto for detail and the scientist's joy in piecing detail into a reasonable whole Enthusiasts, whether botanists with a lust for alpine saxifrages or criminologists who travel miles to see how the murderer escaped through a closed courtyard, readily become bores unless the listener is quickly converted into something of a fellow enthusiast The minutiæ of each case report in this book are almost as interesting as the main stories, and that is the real test for the reader Even coroners have dull moments, and commonplaces like rape and suicides have to be dealt with, but these minor events are enlivened by

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[1] Sachs, H *Irish J med Sci* February, 1941, p 57

[2] Sherwood, N P, Bond, G C and Clark, H F *Amer J Syph* January, 1941, p 93

[3] Eagle, H *Ibid* p 7

[4] London Hutchinson and Co Pp 255 16s

Special Articles

THE PREVALENT DISEASES OF ITALIAN EAST AFRICA

BY PHILIP MANSON-BAHR,
C.M.G., D.S.O., M.D. Camb., F.R.C.P.

THE Italian Empire in East Africa comprised three contiguous colonies more or less complementary to one another; of these Abyssinia is the least, and Eritrea the most highly developed.

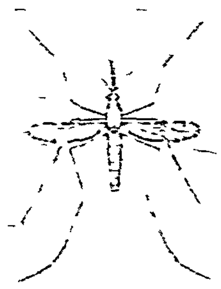
The kingdom of Ethiopia (350,000 sq. miles) is for the most part characterised by a great central plateau of a mean height of 7000–8000 ft. intersected by deep ravines, the chief of which is the great Rift Valley through which the river Awash flows, at a depth of 3000 ft. below the mountain levels.[1] The mountain ranges assume the most fantastic shapes, rising to 12,000 and even 15,000 ft. and on the northern, southern and eastern aspects great rivers arise to join the Atbara, Blue Nile and the Indian Ocean; it is therefore possible to pass in a day's journey from torrid to almost alpine conditions. In the valleys and lowlands the vegetation is dense and the heat tropical, but the plateaux are comparatively bare, cold, windy and sometimes almost subarctic. The south-eastern borders (Ogaden) are flat, dry, hot and semi-desert. The incidence of the abundant rainfall varies in different parts of the country and the rains move from north to south. There are two main seasons, the dry (*baga*) season from October to mid-June and the intensely wet (south-west monsoon) season from then to the end of September. The period of the little rains is about the middle of March.

Eritrea, the most productive and important of these possessions, occupies an area of 15,754 sq. miles and may be regarded as the northern extension of the Abyssinian plateau; its average height is 7000 ft. The only river of importance—the Barca—is not perennial. The climate of the highlands is temperate, especially in the region of Keren, Asmara and Agordat. The coastal region of the Red Sea is torrid and oppressive. The rainfall is intermittent, being determined by the direction of the winds and condensation of the saturated atmosphere from the Red Sea.

In antithesis, Italian Somaliland, occupying an area of 200,000 sq. miles and known as the pearl of Italian East Africa, is mostly desert and intensely hot. The northern part is sparsely inhabited; the central portion, containing the port of Mogadishu, is well watered and irrigated by the Shibeli river descending from the Abyssinian highlands. The southern portion of Jubaland, bounded by the Juba river, is arid and clothed with desert scrub. The heat is tempered by the monsoons for eight months of the year, the south-west monsoon blows from May to August and the dry and hot north-east (the native *gilal*) from October to March. Intermittent rains accompany the south-west monsoon.

MALARIA

In Africa malaria takes pride of place as chief impediment to European colonisation, and in Abyssinia the incidence of various forms of malaria is exceptionally wide in spite of the mountainous nature of the country. Below 3000 ft. malaria is endemic near permanent collections of water, and during the rainy seasons, from July to October, it appears in epidemic form. In the south-eastern desert districts malaria is present also in the dry season in the vicinity of perennial streams, increasing to epidemic proportion during the rains. Between 3000 and 4500 ft. malaria is largely seasonal, and throughout this zone two epidemic seasons occur, from April to June and again from September to November. Even at this altitude malaria is so widespread that spleen rates up to 90% are recorded by Lega, Raffaele and Canalis (1937). The chief forms are, as elsewhere in Central Africa, *Plasmodium falciparum* (the subtertian) and *P. vivax* (benign tertian). Pansini (1939) states that the Italian workers on the roads in the lowlands are heavily attacked in spite of quinine prophylaxis and that malignant infections predominate at first and the benign tertian form appears later, although both were acquired at the same time. Endemic malaria occurs to a lesser extent between 4500 and 6600 ft., above which, according to Corradetti (1938), Raffaele and Lega (1937), Lega, Raffaele and Canalis (1937), and Lorrezoni (1938), indigenous malaria has not been recorded, but it is difficult to reconcile these statements with the experience of Nägelsbach (1934), a German practitioner who, in a comprehensive paper on Ethiopian diseases, found 10 indigenous cases of *P. vivax* in Abyssinian residents of Addis Ababa (8175 ft.). It is probable, however, that on account of the prevailing climatic conditions this occurrence is exceptional. On the extreme slopes of the highlands it may be taken that *P. vivax* is mostly in evidence, while in the southern and eastern districts *P. falciparum* predominates (75% of the total). In the strategically important district of Dessye it is recorded that malaria is endemic throughout the year, though Corradetti (1939) observes that in parts of the Gondar region malaria is entirely absent in the dry season. Raffaele and Lega (1937) have found a special form of subtertian parasite whose morphological characteristics differ sufficiently in their opinion to constitute a subspecies—*P. falciparum*, var. *æthiopicum*—in which the crescents are shorter and broader than in the normal type. On the other hand Mosna (1939) has found no appreciable difference between Ethiopian strains of *P. falciparum* and those of Italian origin as regards their clinical manifestations or their capacity (in Italy) to develop in *A. maculipennis* var. *atroparvus*. V. Chiodi (1936) has recorded the various clinical types of subtertian malaria commonly observed, such as the dysenteric, *bilious remittent and cerebral*; *blackwater fever is not* uncommon in endemic areas. No mention is made of quartan (*P. malariæ*) or of ovale tertian (*P. ovale*), though it is more than probable that both these parasites will eventually be found in this part of Africa. B. Wilson has recently described what he suggests is a new species of malaria parasite, *P. wilsoni*, among southern Abyssinians (Roberts 1940); as far as is at present known, it closely resembles *P. ovale*, but is considerably larger in fully developed forms and the host cell is larger than in *P. vivax*. The number of merozoites is 10–12; stippling of the corpuscle is often absent, but when present is finer than Schüffner's dots. It is to be hoped that malariologists attached to the Imperial Forces will use every opportunity to investigate the exact status of this parasite.



Anopheles gambiæ Giles. The best known, most dangerous and widely spread carrier of malaria in the whole of Africa. It is adaptable and has within recent years been introduced into Brazil, where it is now spreading rapidly and concurrently with subtertian malaria. This is a medium-sized species, the general coloration being yellowish brown. The female has palpi with three pale bands. The femora and tibiæ are speckled; the wings are abundantly speckled, with the third main dark area interrupted on the first vein. The breeding places of *A. gambiæ* are extremely varied, but in most parts it breeds in small pools usually partly exposed to sunlight; other sites are puddles, shallow ponds, pits, animal footprints, small collections of water at roadsides, ditches, seepages, the drying up beds of streams and the borders of lakes and swamps afford appropriate sites. An important source of the larvæ may be found in the shallow overflow of streams or drains. *A. gambiæ* feeds mainly on human blood and enters dwellings in large numbers in most regions where it abounds. In many towns it is the only domestic anopheline.

A large number of anopheles mosquitoes are indigenous to Abyssinia (La Face 1937, Evans 1938, Corradetti 1939). As elsewhere throughout tropical Africa, *A. gambiæ* (see figure) and *A. funestus* appear to be chief vectors and the following species are also listed: *A. cinereus, christyi, demeilloni, d'thali, garnhami, mauritianus, pretoriensis, rhodesiensis, turkhudi*. At high altitudes *A. cinereus* and *demeilloni* only are found.

In Eritrea, which has a population of 600,000 with a density of 5 per km., malaria is everywhere prevalent; according to Mirra (1938), 75% of infections are due to *P. vivax*, 20% to *P. falciparum*, and 5% to *P. malariæ*.

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[1] The physical geography, so far as it concerns the present campaign, has been admirably described in the *Times* (March 31, 1941).

has no relationship to intracranial pressures, they advise repeated lumbar drainage in cases with bloody cerebrospinal fluid and high pressure, if only for the relief of symptoms In this they add support to the recent findings of Rowlette and Weiner[2] These workers lowered the annual fatality for head injuries in a large general hospital from 38 9 to 25 8% by using repeated drainage in patients who had high intracranial pressure as a result of the injury Pickles[3] reports his results in 554 cases of head injury and also advises repeated lumbar puncture, with the use of hypertonic solutions and limited fluid intake if the pressure remains high Lumbar puncture should be performed after the initial period of shock has passed, to discover whether blood is present in the cerebrospinal fluid and to measure its pressure Thereafter puncture should be repeated every few days, or even daily if necessary, to relieve headache and restlessness, until the pressure has returned to normal and the fluid is clear The picture may, of course, be complicated by clear fluid with persistent high intracranial pressure, or by the appearance of progressive signs of cerebral damage, but management then falls outside the application of rule of thumb and must depend on experienced judgment

HOSPITAL QUARTERS FOR MENTAL PATIENTS

ALL too slowly the segregation of mental disease is giving place to the inclusion of mental treatment wards in general hospitals The York Clinic at Guy's was completed, if not opened, a few weeks ago[4] and now we learn of a similar treatment block which has just been put into commission at the New York Hospital, Westchester Division The building is dedicated to the memory of Dr Charles H Nichols, who planned and supervised the building of the first government hospital in America for the mentally ill—St Elizabeth's Hospital in Washington He was superintendent there for twenty five years and subsequently held the same position at Bloomingdale Hospital until he died in 1889 His keen interest in construction of hospitals for the mentally ill took practical form, not only in St Elizabeth's and at Bloomingdale, but in many of the state hospitals of America, Australia and Newfoundland

The new Nichols Memorial Cottage, designed to house twenty disturbed women patients, is a one story building of brick and concrete, made up of two wings forming an L A quadrangle for recreation is completed by corridors running along the other two sides, these lead to the treatment departments and general services of the hospital The many windows look outwards on the grounds as well as inwards on the quadrangle They are closed and sound proof, with special inside window screens in the patient's bedrooms and unbreakable glass elsewhere, no grills or guards are used The whole cottage is air conditioned, the system of air intake and exhaust providing four changes of warm, humidified or cooled air every minute Partitions and doors are all sound proof, and rubber tiled floors and acoustical plaster on ceilings and walls of neighbouring walls deaden reverberation Mental patients are often distressed by the outburts of their neighbours, a point which their relations are apt to exaggerate and their doctors to discount This aspect of mental hospital life possibly retards recovery more than administrators hope The quiet of the memorial cottage will be therapy in itself

It contains fourteen single bedrooms and one six bed dormitory, two sitting-rooms for patients and two visiting-rooms No mention is made of occupational rooms but probably the sitting rooms are used for this purpose Messrs Thompson and Walford, the architects, who helped to design the York clinic, emphasise particularly the importance of occupational rooms in mental hospital
construction ; certainly this side of therapy is gain
ground every year, literally as well as figuratively It
as well to provide spacious accommodation for it at t
start The designers of the memorial cottage, like tho
of the York Clinic, have aimed at making the roo
restful, warm and comfortable, while ensuring also th
they are sanitary and easily cleansed Natural finish
wood doors, special lighting and pleasantly colour
furniture and curtains have achieved this, safely avoid
the institutional effect which patients and their relati
dread

At the angle of the two blocks there is a glass enclo
station from which a charge nurse can supervise
corridors, sitting-rooms and dormitory, she is in tou
by a signal system with the separate treatment roo
The building also houses its own shower and bath roo
some with continuous-flow equipment, a pack room a
blanket dryer, a special treatment room, a clothes ro
with patients' lockers, a linen room, utility room, dini
room and serving pantry The governors of the soci
of the New York Hospital say that physicians will alwa
be welcome visitors to the memorial cottage When t
Atlantic once more becomes a highway no doubt some
us will be accepting that invitation

TALCUM GRANULOMA

THE unconsidered trifles left by surgeons in woun
often provide pretty problems for the histologist Lea
ing aside the better known foreign bodies such as cott
fibres and suture materials, E J McCormick and T
Ramsey[1] suggest others that may assume clinical impo
ance Thus talcum powder, used on the hands a
gloves before starting an operation, contains magnesiu
silicate and sometimes lycopodium spores, and both
these, when introduced into the tissues, can stir up
granulomatous reaction somewhat resembling tube
culosis McCormick and Ramsey describe two cases
both of which laparotomy was first performed for su
purative salpingitis After uneventful recovery ea
returned with symptoms due to adhesive peritonit
and a second laparotomy, performed 7–8 weeks aft
the first, disclosed a local inflammatory condition of t
pelvic peritoneum with adhesions resembling, in the fir
case, granulomatous tuberculosis Microscopically t
similarity to tuberculosis was largely maintained in bo
cases there was a granulomatous—in places caseo
—reaction associated with large foreign body giant ce
in which occasional crystals of magnesium silicate we
recognisable Most surgeons are careful to wash
any excess of powder before starting to operate, but t
use of less irritant powders might well be considere
J W Miller and R R Sayers[2] have injected a larg
variety of industrial dusts into the peritoneal cavity
guineapigs, and from the histological effects produce
in the peritoneum within 90 days they classify the dus
into proliferative, absorptive and inert groups Ta
falls into the so called inert group, but from the accoun
they give of its behaviour it cannot be dismissed as harm
less Members of this group persist in the peritone
cavity and cause both fibroblasts and macrophages t
proliferate, the nodules so formed tend to becom
flattened in time but apparently do not disappear—
indeed, Miller and Sayers found as much of the dust i
the peritoneal cavity at the end of a year as at the en
of a week Dusts of the absorptive group, on the othe
hand, excite only a transient reaction, and the onl
trace eventually left of them seems to consist of particle
of brown pigment, apparently of endogenous origin
Such dusts would therefore be suitable for use on th
surgeon's gloves Those of the group tested by Mille
and Sayers were mainly varieties of calcium carbonate,
and this compound, finely divided, might reasonably be
used instead of talcum powder

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[2] Rowlette, A P and Weiner, D O *Surg Gyn Obstet* March, 1941, p 551

[3] Pickles W *New Engl J Med* January, 1941, p 139

[4] See *Lancet*, April 19, p 513

[1] *J Amer Med Ass* 1941, March 1, p 817

[2] *Publ Hlth Rep Wash*, Feb 14, 1941, p 264

1913. It usually takes the bubonic form, as in Mogadishu in 1918, and from 1922 to 1924 there were small epidemics in the Shibeli district where plague probably is rural, or sylvatic, and maintained in small desert rodents and jerboas (Croveri 1935). Pistoni (1938) has investigated the rat population of Eritrea, where the black rat is universally distributed and no brown rats exist. The ectoparasites are the fleas *Xenopsylla cheopsis* and *Nosopsyllus fasciatus*.

BACILLARY DYSENTERY AND AMŒBIASIS

There is very little accurate information regarding the dysenteries. Bacillary dysentery is probably common in the whole of East Africa, but to an extent hitherto unascertained. Amœbiasis appears to be widespread. It is absent in the desert areas of Somaliland, but common, like ankylostomiasis in the irrigated districts. In the village of the Duke of Abruzzi, Mattei found *Entamœba histolytica* cysts in the fæces of 30% of residents. The disease seems to arise mostly in chronic form, so that hepatic complications are extremely rare. This is said to hold good for all the territories under consideration.

GENERAL DISEASES

Lobar pneumonia is said to be very prevalent and especially fatal in Abyssinia. Little is known about the avitaminoses; beri-beri is fairly common on the Benadir Coast in Somaliland and is said to be of a mild type (Veneroni 1913). No mention of pellagra is made in any of the literature on this region, but probably it will be found here as elsewhere. Tuberculosis of an acute pulmonary form is widespread to an extent not accurately known throughout the whole of Italian East Africa, especially, we are told, in the neighbourhood of Mogadishu (Croveri 1935). Europeans who contract tuberculosis do not do well in this country. Nägelsbach (1934) states that tuberculosis of the glands, joints and skin is about as frequent as in central Europe. Leprosy is widespread, probably more so than in almost any other part of Central Africa. Chiodi (1936) says that nodular, anæsthetic and mutilating types are often met with. Its segregation and treatment are attended with great practical difficulties (Nägelsbach 1926).

Cerebrospinal fever was first noted in Eritrea in 1901 and since 1935 cases have occurred in Asmara, Assab, Agordat, and Massawa. In 1937 an epidemic was recorded in Somaliland and Abyssinia, and its spread was attributed to the opening up of the country after the Italian conquest (Castellani 1939). Croveri states that in Somaliland fevers of the enteric group are unknown, but in Abyssinia they are common according to Nägelsbach. Very little work in accurate diagnosis, however, appears to have been done. Smallpox is prevalent throughout all these territories and its extent can be judged by the number of pock-marked faces to be seen; this is especially the case amongst the Somalis. The incidence is said to have decreased since the Italian occupation.

Ulcus tropicum appears to be very common throughout the whole region and probably also diphtheritic desert sore. Madura foot has been recorded from Mogadishu on the Benadir Coast by Polidori (1936), but most cases do not apply for treatment till they are beyond medical aid and amputation is necessary.

Rabies is one of the worst scourges of Abyssinia; jackals, hyenas and dogs are commonly infected, especially in the Harar and Jijiga regions. In Somaliland it affects camels and other domestic animals and in desert regions the disease is of considerable local interest in that the aardwolf (*Proteles cristabus*) has been found infected in British Somaliland by Godding (1934) and may transmit the virus throughout the whole of its wide range.

VENEREAL DISEASES

Venereal diseases are a pest everywhere in the region, especially in Abyssinia, and gonorrhœa is almost universal. The Somalis with some justification blame the Europeans for the introduction of syphilis into their community, where it is widespread and known locally as "frengi,"[2] meaning "foreigner" and this belief radiates through the whole of East Africa. All observers, but especially Nägelsbach (1934) in Abyssinia, call it "exotic syphilis"; he, stressing its mild character considers that it stands halfway between old-world syphilis and tropical yaws. The congenital disease and the nerve complications are not seen. The suggestion has been made that the gravity of syphilitic infection in Abyssinia at any rate, has been modified by the extremely prevalent malaria, but it is evident that it conforms on the whole to the mild form known elsewhere in Africa as Arab syphilis or "bejel."

That soft sore and lymphogranuloma inguinale (climatic bubo) are almost as common may be inferred from the romantic reports of Castellani (1939) to the Office Internationale d'Hygiène Publique. In these, gullible plutodemocrats are invited to believe that to Dessye, which is a military centre, hundreds of aristocratic Abyssinian girls flocked to become enrolled in a "corps of charmers," and begged the victorious Italian troops to obey the Duce's commands of the strictest sexual prophylaxis; as a result, we are told, no case of venereal disease has ever been contracted by the clientele of the Maison de Tolérance Blanche, instituted by the authorities on the spot!

The practical difficulties of distinguishing it from syphilis have militated against the recognition of yaws, but Croveri, who has had a long practical experience in Somaliland, says that classical yaws is common among the Somalis of the northern territories. Yaws is said not to occur in the highlands of Abyssinia (Castellani 1939).

HELMINTHIC DISEASES

The conditions throughout the whole of this area provide unlimited facilities for the spread of helminthic diseases; especially is this so in Abyssinia, which is facile princeps of all Africa in this respect. Owing to the custom of feastings on uncooked meat, almost every Abyssinian harbours a tapeworm and since it takes two months, as Nägelsbach remarks, for the worm to mature, the average is six *Tæniæ saginatæ* a year; indeed it is considered a social disgrace not to be so blessed. An infusion of kousso flowers (*Brayera anthelmintica*) is regarded as a powerful vermicide and is taken by the higher class natives on an appropriate holiday known as "kousso flower day." The infusion exerts a direct toxic action on the parasite which is killed outright and broken into fragments. It is even recorded that if a big chief does not wish to receive a visitor he will excuse himself with the plea "this is my kousso flower day." Pork is not eaten to any great extent, so that *T. solium* infection is rare and is indeed unknown in Somaliland because the Somalis subsist mostly on milk. In Mohammedans *T. solium* is, of course, not found, but the dwarf tapeworm, *Hymenolepis nana*, is common.

There are no figures regarding the prevalence of ankylostomiasis in Abyssinia, but Croveri states that in Somaliland it is widespread in the cultivated and irrigated Shibeli area where conditions favour its spread. The percentages range from 37% (Basili) to 50% (Mirra 1939). In the village of the Duke of Abruzzi, Bachelli (1936) found 38% of the population positive, and out of a total of 3250 examinations in the Merka district Talamonti found *Ancylostoma duodenale* in 55% and *Necator americanus* in 16%. In Eritrea, Huard (1937) estimates that 16–50% of the inhabitants have hookworm disease. Ascaris and oxyuris infections are said to be almost universal throughout the whole of Italian East Africa.

Bilharzia being essentially an African parasite, it is to be expected that both *Bilharzia hæmatobia* and *Bilh. mansoni* should be found. Along the Somali coast the former is widespread (Zavattari 1938) as in Egypt, being disseminated, it is said, mainly by religious practices. Carcinoma of the bladder is a common sequel. According to Girolami (1935) the vector in this area is not yet known. The appropriate molluscan host, *Bulinus* is not recorded, though snails of the genera *Planorbis Blanfordia* and *Ampullaria* are abundant. Bilharziasis due to *Bilh. mansoni* has been recorded in Abyssinians in Harar with enlargement of the spleen and hepatomegaly and the vector is *Planorbis adowensis* (Bourguignat 1879) which occurs locally (Giovannola 1939). An autochthonous focus of *Bilh. hæmatobia* has been recorded near Asmara (Huard 1937), and *Bilh. mansoni* is also by no means uncommon. Satta (1935) has reported a case of this infection at the Dedda falls and cercaria-infected

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[2] In Ceylon yaws is known as "parangi," which appears to have had a similar derivation.

Giordano (1936) states that malaria becomes common towards the rainy season, especially in the late winter and early spring in the eastern plains. In this colony the maximum diffusion of malaria does not occur above 3300 ft., though it is said to sometimes arise in Asmara at 7900 ft. *A. gambiæ* and *A. mauritianus* are the chief vectors.

In Somaliland malaria is absent from the arid deserts which constitute the major part of the colony, but is widely spread in the cultivated and irrigated Shibeli area where *A. gambiæ* abounds. Lega, Raffaele and Canalis (1937) aver that *P. vivax* cases outnumber *P. falciparum*. Quartan malaria is to be found, as in the Mediterranean and elsewhere, mostly in small children. Croveri (1935) states that the proportion is *P. vivax* 44%, *P. falciparum* 30%, and *P. malariæ* 26%. Severe epidemics of malaria have been recorded amongst the Somalis, in one of which pneumonic symptoms predominated so that it was at first suspected to be pneumonic plague.

LEISHMANIASIS

Both the visceral type of Leishmaniasis—kala-azar—and the cutaneous form—oriental sore—occur throughout Eritrea and Abyssinia to a hitherto unspecified extent (Speziale and Berger 1939). Italian records are extremely vague in this respect, but that kala-azar is probably widely spread in western Eritrea is suggested by the proximity of the Kassala district of the Sudan where a focus of this disease has been known to exist for over 30 years, and by scattered areas of leishmaniasis in the Fung district of the southern Sudan which adjoins western Abyssinia, as have recently been described by Archibald and Mansour (1937), and the similar foci of infection in the extreme south-west in the triangle adjoining the Uganda-Kenya border. Poggi has recorded oriental sore amongst the population of the Agame district of Abyssinia and Conti the occurrence of leishmaniasis among dogs (*Leishmania canina*) in Eritrea.

TRYPANOSOMIASIS

Human trypanosomiasis has not yet been discovered in Abyssinia, but various species of tsetse fly (*Glossina*) are found in the south; *G. morsitans*, for instance, has been found on the river Didessa, a tributary of the Blue Nile, *G. palpalis* (the normal vector of *Trypanosoma gambiense*) abounds on the river Omo which flows into the north end of Lake Rudolf, and, according to Ghidini (1938), *G. longipennis*, *brevipalpis*, *austeni* and *pallidipes* have also been recorded. The upper altitudinal limits of distribution of tsetse flies in this country is unknown but probably not above 3000 feet. In southern Somaliland *G. pallidipes* is commonly found along the Juba river and is the vector of animal trypanosomiasis in that area.

RELAPSING FEVER

Relapsing fever is widely distributed throughout the regions under consideration. In Eritrea both the louse-borne form (*Spirochæta recurrentis*) and the tick-borne form (*Sp. duttoni*), conveyed by the soft tick, *Ornithodorus moubata*, have been recorded by Giordano (1936); di Benedetto (1939) has analysed 193 cases of *Sp. recurrentis* infections from this area and finds the liver and spleen enlarged in the initial febrile periods. Most cases are slightly jaundiced and the majority have albuminuria and glycosuria. In Abyssinia, where there is a heavily louse-infested population, it is not surprising to learn that relapsing fever is common. On the high plateaux it is entirely the louse-borne variety (Scaffidi 1937), but in the valleys "tick fever" is the rule and is conveyed by *Orn. moubata*, a tick which does not live above 6000 ft. Many mixed infections of relapsing fever and subtertian malaria are encountered (Taddia 1938). In Somaliland relapsing fever is almost entirely tick-borne. An allied species of tick, *Orn. savignyi*, is abundant there as well as in Abyssinia, and has long been under suspicion as a vector on epidemiological grounds (Moise 1938), but proof has not been obtained under laboratory conditions (Kirk 1938). Bergsma (1928) has stated that in Italian East Africa, as a general rule, one intravenous injection of neosalvarsan, 0·6–0·7 g., or novarsenobenzol, prevents further relapses, but that jaundice may ensue as a result of such treatment. Relapsing fever is also commonly associated with subtertian malaria in Somaliland (Taddia 1938).

YELLOW FEVER

The range of yellow fever in Africa extends much farther in a northward and eastward direction than was formerly supposed and even to western Abyssinia. De Lotto (1940) describes in that region bilious fever with icterus, blackish vomit and hæmoglobinuria in which quinine was useless. The frequency of the universal vector of the virus, *Aedes ægypti*, in this district is not given, nor are there any records of pathological examination of the liver, but the clinical description tallies with that of yellow fever.

It is necessary to appreciate that the yellow-fever virus has been found to extend over a much wider area than the clinical manifestations it may evoke. This has been established by the application of the "mouse-protection test" to samples of sera obtained in the areas under investigation. This test proves immunity to the virus of yellow fever. Sawyer and Whitman (1936) have shown that such immunity is widely spread in an irregular manner in a region extending from the coast of Senegal eastward for some 3300 miles to the upper reaches of the White Nile in the Sudan. In 1934, Hewer discovered a case of yellow fever in Wau, in southern Sudan, on a tributary of the White Nile. Findlay (1938) found that in the Fung area on the western Abyssinian border 10–50% of the sera showed immune bodies and concluded that the yellow-fever area probably extended to the foot hills of the Abyssinian plateau. Atkey (1939) has reported that in Malakal on the White Nile the immunity-rate rose from nil to 18% in 4 years, yet in this period there was not a single recognisable case of yellow fever and *Aed. ægypti* is almost non-existent there. This finding, together with other scraps of evidence from West Africa (O'Brien 1939), conjures up the possibility of "jungle yellow fever" in Central Africa analogous to that found in Brazil (Soper 1938) and should be further investigated on the spot. These surmises have received recent confirmation. Hewer, who made a survey of the southern Sudan, brought forward evidence that yellow fever occurred in the Nuba Mountains in Kordofan about 1904, on the Bahr el Ghazal in 1928 and in Mongalla in 1927; now we learn that in the former locality there was a serious epidemic during the autumn of 1940 in the absence of *Æd. ægypti*, and that there were 1600 deaths in 15,000 cases.

TYPHUS

According to all authorities typhus is widespread throughout the high Abyssinian plateau and occurs in endemic and epidemic forms. Mariani (1939a) states that the endemic flea-borne form predominates, being the mild type formerly known as Brill's disease. Recent research has conclusively proved that this virus is of murine origin and that it is conveyed to man by the rat-flea. The epidemic variety is much more malign; it is essentially of human origin and louse-conveyed. Among Europeans benign cases are common but they are apt to acquire a more virulent type of infection when in intimate contact with native Ethiopians. It was formerly noted that there was a seasonal recrudescence of typhus during the rains, but owing to the building of roads and improvement of communications, this epidemic character is no longer as definite as it was. Prophylactic inoculation has been introduced and Mariani (1939b) reports on 13,000 vaccinations with transient reactions and favourable results.

In Eritrea, too, typhus occurs on a minor scale. Scaffidi (1937) stresses the admittedly difficult task of recognising the typhus rash on a black skin, where it may often assume the appearance of a transient exanthem. Tick-borne typhus (fièvre boutonneuse) and transmitted by *Rhipicephalus simus* is recorded from Eritrea by Giordano (1936).

MINOR FEVERS

Dengue and sandfly fevers are endemic in Somaliland and probably throughout the whole area. Massa and de Vivo (1937) record a great outbreak of dengue in 1936. It was remarked that the leucopenia was diagnostic. In Abyssinia Nagelsbach (1934) says that sandflies (*Phlebotomus*) are very common and sandfly fever prevalent.

PLAGUE

Plague has been recorded on several occasions in Somaliland. An epidemic was recorded by Veneroni in

GAS CASUALTIES

THEIR DIAGNOSIS AND TREATMENT

While the possibility of the enemy using gas exists it must be the duty of every doctor to keep himself familiar with the main clinical features of gas poisoning and the essentials of treatment The Ministry of Health is therefore issuing the following memorandum for our information.*

Of the poison gases likely to be used by the enemy there are two main types—the vesicants (mustard group) and the pulmonary irritants (phosgene group)

VESICANTS

Of the vesicants *mustard gas* accounted for upward of 70% of all our gas casualties in the last war It can be employed in shells and bombs and sprayed from aeroplanes, but its dangers should not be exaggerated, for its fatality in the British army in the last war was little more than 2%, and 80% of cases were fit for active duty within a month To secure such low figures, however, a high degree of gas-mask and other discipline is necessary The early symptoms, which develop in the course of a few hours, include skin burns ranging from a slight erythema to severe blistering and affecting especially the softer skin and moist surfaces ; blepharitis and conjunctivitis ; laryngitis, tracheitis and bronchitis ; vomiting The sequelæ in the graver cases include corneal ulceration, bronchopneumonia and bronchiectasis

The lesions may be caused by vapour or by actual roplets The latter should be immediately removed rom exposed skin by dabbing (not wiping) with a handerchief or linen, which should at once be discarded Bleach ointment or paste or Anti-gas Ointment No 2 hould then be applied to the skin As soon as possible ontaminated clothes and footwear must be removed nd the patient must wash thoroughly with soap and water Treatment of the eyes, if affected, should always be given preference over treatment of the skin It hould include immediate and free irrigation with water To prevent secondary conjunctival infection, the instillation of Albucid in a 2 5% solution four times daily is recommended Later atropine 1%, in ointment or in drops, may be used to counteract the pain of ciliary spasm Liquid paraffin drops to prevent sticking of the lids may be employed after 12 hours Cocaine preparations and bandaging of the eyes must on no account be allowed Eye shades may be used in the early stages

Blisters should be aspirated with a hypodermic needle and syringe For open skin lesions, after the stage of profuse exudation the recognised treatment for ordinary burns should be applied Laryngitis and tracheitis should be treated with steam inhalations Bronchitis and bronchopneumonia should be treated on general principles ; sulphapyridine may prove valuable in preventing the latter

In the last war there was a high incidence of functional sequelæ, including photophobia and blepharospasm, aphonia and vomiting Early reassurance as to the unlikelihood of blindness, discountenancing a too long use of eye-shades, and so on, may play an important part in treatment Once the early essential treatment has been given mustard-gas casualties may be safely evacuated to a distance as stretcher or sitting cases according to their severity

In patients severely injured as well as contaminated with gas, elaborate washing and the like will be out of the question, but the clothes should be cut off as quickly as possible and local eye and skin contamination dealt with as effectively as the patient's condition allows The order of urgency in such cases is (1) removal of outer garments and shoes, (2) methods directed towards saving life and treating shock, (3) saving the eyes, and (4) cleansing the skin

Lewisite, besides being a vesicant, is also a lung and nose irritant and a tear gas and is readily recognised by its early effects on the upper respiratory tract When present in large quantity on the skin it can be absorbed and cause severe arsenical poisoning On the skin hydrogen peroxide (20 vols) or a 20% solution of hyperol (urea peroxide) is an effective counter-agent If blisters form, they should be opened and the raw surface irrigated to lessen the likelihood of absorption Otherwise treatment is as for mustard gas

LUNG IRRITANTS

Phosgene is the most important of the lung irritants It can be employed in shells or bombs When the gas is present in very high concentration it may fatally asphyxiate people who are inadequately protected With the more usual concentrations immediate symptoms may be slight or absent, but dangerous symptoms may follow even several hours after exposure The likelihood of such symptoms developing is much increased if the exposed subject remains physically active Every person who has been exposed to phosgene vapour without gas-mask protection should therefore become a stretcher case as soon as possible On arriving in hospital or at a treatment centre cases should be grouped into mild, moderate and severe categories, and if possible these groups should be treated separately

Mild cases show a reddish flush on the face, increased respiration-rate, and pain in the chest aggravated by coughing Absolute rest, fresh air, fluids and nursing are the chief requirements, with careful watching lest any of them pass into one of the graver groups

Moderate cases show greater respiratory distress, with varying degrees of pulmonary œdema, blue cyanosis, distended neck veins, a full strong pulse without a great rise in rate Treatment is continuous oxygen by nasal catheter or B L B mask (or in the less severe cases intermittent pure oxygen from a nitrous oxide bag), venesection and nursing care

Severe cases show collapse, coldness, a weak rapid pulse, and pallor with leaden “ grey ” cyanosis and no distension of the neck veins There is profuse pulmonary œdema, often with froth pouring from the mouth and nose, and great respiratory distress with shallow and largely diaphragmatic breathing and the chest in the inspiratory position Continuous oxygen should be given in high concentration with the B L B mask or double nasal catheter, the flowmeter delivering at a sufficient rate to maintain a pink colour in cheeks and lips Venesection should not be attempted It may be necessary to lower the head and raise the feet to allow the œdema fluid to escape more freely Morphine is contra-indicated Atropine and adrenaline are not required Although there is hæmoconcentration and increased viscidity of the blood all forms of intravenous fluid are considered inadvisable owing to the risk of increasing the pulmonary œdema Warmth and the most attentive nursing are essential Patients may be restored to health after needing as much as 72 hours of continuous oxygen administration Pneumonia is an occasional complication Late sequelæ are rare

Oxygen properly administered is a life-saving therapeutic agent both in the “ blue ” and “ grey ” cases Evacuation of phosgene cases to a distance, until they have been pronounced out of danger, should be prohibited Even the slightest cases should be under observation and at rest for 48 hours

OTHER GASES

Carbon-monoxide poisoning may result from leakage from gas mains after air-raids or from the explosion of bombs in a confined space Rest, restorative treatment, artificial respiration, and oxygen with carbon dioxide are the chief indications

Tear gases and nose irritants do not produce casualties requiring hospital treatment The main symptoms are lacrimation, sneezing, intense frontal headache, burning mouth and throat, nausea and tightness in the chest In a gas-free atmosphere the symptoms usually pass off in an hour

CONCLUSION

The gas-mask, if adjusted properly and in time, gives full protection to the lungs and eyes against all these gases In a gas attack doctors will have a most important part to play, not only in recognising and treating cases and recording new phenomena but also in preventing panic by reassurance, by stressing the effectiveness of the protective and therapeutic measures at our disposal, and by insisting on gas-mask discipline

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* A revised edition of the War Office Medical Manual of Chemical Warfare (H M Stationery Office, 2s 6d) is now in preparation

Plan boissyi var *asmarica* were discovered locally, though Giovannola (1939) states that it is a distinct species *Plan ruppelli* (Dunker 1848) There is only one record of *Bilh mansoni* in Somaliland (Bachelli 1936)

With regard to filariasis, little work has been done on *Wuchereria bancrofti* in these territories, but it is probable that limited foci exist, as in Egypt Luders (1937) has recorded microfilaria of *W bancrofti* in the urine of one patient in Bedelle, Abyssinia Cases of elephantiasis are not uncommon in Somaliland, and Croveri (1935) states that *W bancrofti* probably occurs there The discovery of isolated foci of onchocerciasis in northern Kenya makes it probable that *Onchocerca volvulus* may exist in southern Abyssinia, especially as the appropriate fly vector—*Simulium damnosum*—constitutes a great plague there (Mirra 1939)

The guineaworm, *Dracunculus medinensis*, has been reported from Somaliland, but it may have been an imported infection

MINOR HORRORS

A search through the literature has unearthed a number of references to poisonous snakes Pepeu (1935), who spent 4½ months on the Sudan-Eritrean border, records the capture of numerous *Echis carinatus* (the efa or phoosa, recognisable by the broad-arrow mark on the head), *Naja nigricollis* (the black-necked cobra), *N haja* (the Egyptian cobra), and *Bitis arietans* (the puff-adder) *Atractaspis irregularis* and *Atr magrettii*, viperine snakes characterised by small heads and enormous poison fangs, are abundant Zanettin (1935) has described the ocular effects caused by the spitting of poison of the black-necked cobra The venom has a proteolytic acid leading to necrosis of the conjunctivæ In Somaliland the Egyptian cobra, the black-necked cobra, the phoosa and puff-adder are all common and in addition there are three species of *Attractaspis—engdali, leucomelas* and *microlepidota* The venoms of the latter group have been studied by Pepeu and it has been found that the polyvalent antivenene in general use is protective In Abyssinia all the species already mentioned are met with and *E carinatus* is very common In addition there is the deadly mamba—*Dendraspis angusticeps*—which may be uniformly either green or black Scortecci (1938) describes a fatal case of this snake-bite in which death took place in 7 hours *Sepedon hæmachates*, the spitting snake, or "ringhal's slang," can eject, for a distance of a yard or more, venom which, if it enters the eye, sets up severe conjunctivitis *Psammophis sibilans*, the hissing sand-snake, is also found throughout this region

The chigger—*Tunga penetrans*—constitutes a first-class minor pest and is a comparatively recent importation In Abyssinia it was reported to be absent by Lambie in 1920, but 4 years later it was well established (Nägelsbach 1934) In Eritrea this ectoparasite is said to have been introduced from Somaliland 25 years ago Scorpions are plentiful, but there is no reference in the literature to any peculiar features of the local species, their stings are as painful and incommoding as elsewhere

COMMENTARY

Public opinion regarding the nosology of Abyssinia may have been greatly influenced by the official medical reports on the Italian conquest of that unfortunate country, these presented a rosy picture, whereas, on the evidence of the Italian observers quoted in this paper, none of the territories under consideration can honestly be described as health resorts Some reference is obviously necessary to the account which Castellani has given to the world in his papers and lectures on the hygienic measures and hospital organisation of the Italian *expeditionary forces* during the Ethiopian War of 1935–36 Even a cursory examination demonstrates that the figures are to a large extent fallacious It is necessary to emphasise this point since this report has been widely cited as the outstanding example of modern military hygienic achievement (see Scott 1939) It is only necessary to refer to a few of the obvious anomalies The number of white troops engaged was over 500,000, and during the 7 months of war deaths from disease (including those from accidents such as drowning) numbered 599, which gives a figure for the annual death-rate of 2 per 1000, this puts the death-rate of the Italian Army at less than 2 9, the lowest annual figure ever recorded for the age groups 20–30 in the Registrar General's Report for England and Wales under peace conditions and lower than the lowest to be recorded for the Italian Army in Italy Nor need we regard seriously the remarks on the low incidence of malaria among the Italian troops during this campaign, this was ascribed to quinine prophylaxis in one of the most malarious countries in the world, in direct contradiction to the testimony of the Italian medical officers quoted in this paper In a country teeming with tapeworms only two were noted in the Italian Forces It can therefore be surmised that in this case political propaganda has overridden statistical accuracy

I wish to express my indebtedness to the Director and Staff of the Bureau of Hygiene and Tropical Diseases for helping me to obtain Italian references to this region

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SULPHANILAMIDE AND TANNIC ACID —Mr E A Lum, Ph C (Harrow) writes During the course of research work on the sulphonamides it was noted that sulphanilamide was soluble in warm tannic-acid solutions This fact, which as far as I am aware has not been published previously, may be of use to medical practitioners who employ tannic-acid solutions for the spray treatment of burns, and who may wish to add sulphanilamide to the spray An aqueous solution containing 6% of tannic acid and 3% of sulphanilamide may be easily prepared by mixing the ingredients and warming until solution is complete Such a solution, which must be employed whilst still warm, might be worthy of trial in the treatment of certain types of burn Whether a loosely combined sulphanilamide "tannate" is formed in solution has not yet been ascertained that of Hornsey being 11 2, that of East Ham 11 4, but the birth-rate of the former was 11 4 and of the latter 14 1 In Hornsey the stillbirth-rate was 35 9 and the infantile mortality 27 In East Ham these rates were 29 9 and 41 Mortalities from tuberculosis, cancer, diabetes and peptic ulcer were slightly higher in East Ham than in Hornsey but not significantly so, whereas that from appendicitis was nearly double in the latter.

Dr Barker gives some facts about miniature screen photography for the recognition of early pulmonary tuberculosis, the most important of which is that the method makes it possible to examine 200 persons per hour "The extension of this method in the future to periodic health examinations for the whole industrial community may prove an invaluable contribution to preventive medicine" We must wait for some years for a true verdict on the value of this measure, but the evidence should be collected as speedily as possible, for it may solve the outstanding problem of tuberculosis—how to detect progressive tuberculosis of the lungs at the earliest possible moment without drawing into the net cases which are dormant

In Hornsey the population, birth-rate and death-rate have been nearly constant since 1932 and the two rates nearly equal, the averages being 11 8 and 11 6 respectively The infantile-mortality rate of 27 25 in 1939 was a record

CHADDERTON

Tables of the notifications of infectious diseases and of the fatalities from them and from influenza and cancer in 1912–39 are included in Dr J S G Burnett's report of Chadderton, an urban district in the Manchester area with a population of 30,000 These give a quick view of the history of disease during the past 38 years The incidences of erysipelas, scarlet fever, pneumonia and tuberculosis have been halved, that of diphtheria is unaltered The acute infections of the nervous system are distributed irregularly Of 19 cases of encephalitis lethargica 16 were notified in 1924–27, poliomyelitis occurred in two years only, one giving 3, the other 2, notifications, and the 8 cases of cerebrospinal fever happened in six separate years, the only year to give more than 1 case being 1936 with 3 There was no fatality from smallpox throughout the period, none from the enterics since 1933 and only 5 since 1917, the deaths from tuberculosis and pneumonia have fallen by more than 50%, while those from cancer have roughly doubled The diseases which the last generation held to be preventable have indeed been controlled by this, with the exception of diphtheria, which resisted until the coming of immunisation

Infectious Disease in England and Wales

WEEK ENDED APRIL 26

Notifications—The following cases of infectious disease were notified during the week smallpox, 0, scarlet fever, 1021, whooping-cough, 4187, diphtheria, 912, enteric fever, 26, measles (excluding rubella), 13,883, pneumonia (primary or influenzal), 1095, puerperal pyrexia, 123, cerebrospinal fever, 309, poliomyelitis, 6, polio-encephalitis, 2, encephalitis lethargica 6, dysentery, 106, ophthalmia neonatorum, 81 No case of cholera, plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospitals of the London County Council on April 25 was 1751, including scarlet fever, 236 diphtheria 343, measles 373, whooping cough, 351 enteritis 19, chicken pox, 78 erysipelas 53, mumps, 11 poliomyelitis, 1, dysentery, 31 cerebrospinal fever, 64 puerperal sepsis 6, enteric fevers 8, german measles, 19 encephalitis lethargica, 2, other diseases (non infectious), 72, not yet diagnosed, 84

Deaths—In 126 great towns there was no death from smallpox, 1 (0) from scarlet fever, 1 (0) from enteric fever, 32 (2) from whooping-cough, 10 (2) from measles, 27 (1) from diphtheria, 31 (5) from diarrhœa and enteritis under 2 years, and 37 (2) from influenza The figures in parentheses are those for London itself

There were 7 deaths from whooping cough in Liverpool and 12 in Glasgow Newcastle upon Tyne reported the fatal case of enteric fever

The number of stillbirths notified during the week was 209 (corresponding to a rate of 38 per thousand total births), including 13 in London

In England Now

A Running Commentary by Peripatetic Correspondents

WHAT has impressed me about the several thousand donors I have bled is the almost uniform way in which they react to the minor operation of blood-letting If it is a first experience, they approach with apprehension and distrust the assurance that there is to be no pain Outwardly they are calm and collected, but the practised eye knows the meaning of the thoughtful expression the rigid attitude and the fast pulse And this is confirmed when they are told that the worst is over, the needle being then in the vein They smile, relax and almost invariably remark that "that was nothing to worry about" On subsequent visits there is of course no apprehension, there is no unknown to fear While most of those who give the standard amount of blood (about two-thirds of a pint) feel fit and suffer no inconvenience, it is not to be expected that all the donors will be so fortunate No searching test of the suitability of a donor is made, and if he says he is in good health and looks well he is accepted But even the best of health is no safeguard against an upset if nervousness, fatigue and hunger are complicating factors Whatever the cause or causes, the sequence of events in an upset is very similar The donor lies very still and forgets to cooperate (as in opening and shutting the fist), the blood flow slows until it comes in drips, there is a slight restless movement of the limbs or whole body, a single deep breath is taken, and the eyes turn upwards Consciousness is lost for a minute or two and the donor wakes up looking slightly bewildered and hoping that his lapse has not been noticed Instead of unconsciousness there may be a hot sweat and sometimes the alimentary canal is disturbed enough to cause vomiting and diarrhœa One very characteristic prodromal symptom of vomiting is the placing of the donor's free hand on his epigastrium Much rarer variations of an upset are a generalised tonic contraction of the muscles (as in the second stage of epilepsy) and air-hunger I have seen only one example of air-hunger in which the over-breathing lasted for a minute or two and produced tetany in the hands Most of the reactions begin within a few minutes of the withdrawal of the needle from the vein and relapses are rare In any case the discomfort is trivial in comparison with the good that these people are doing

* * *

Two days ago I took a lad of 17 with schizophrenia up to Harley Street to have his first electrically produced convulsion A few weeks before he had been in the window-smashing, voice-listening stage, but going up in the car—I am quite sure as a result of apprehension—he chatted quite sensibly In a pleasant drawing-room the hawk-eyed specialist laid him down on a couch—"I'll just fix this flying-helmet thing on you"—a clever touch with a boy He moved something in an unobtrusive little box and sent 90 volts for $\frac{1}{10}$ sec through the patient's temples, whereat he had a prolonged epileptic fit The boy woke up with amnesia for the event and the last part of the journey up, he said he felt as though he had played several hard sets of tennis "Why does it act?" I asked "Empiric," the specialist answered, meaning he hadn't the foggiest idea I was left to ruminate over a chequered scrap-book At school there were always boys who gradually became unbearable about the middle of the term (not quite to the schizophrenic stage of turbulence and inanity, but very nearly), got a good hiding or had a colossal row, and were comparatively reasonable for the rest of it I recall various cheerful souls at hospitals, and lonely men in isolated bungalows throughout the world for whom the weekly, monthly or six-monthly "blind" was the price of sanity I remember a liner on the beautiful diagonal run across the Pacific on every trip at a point where pleasure had palled and the thought of arrival had not become exciting there were two days when the passengers quarrelled and complained about the excellent food What is this rebellion against routine, however pleasant? Has civilisation acted as a protection against seasonal changes—the fear and hunger of winter, the sexual orgies of spring, the expansive abandon of summer, the gluttony

BRITISH EQUIVALENTS OF FOREIGN DRUGS

LAST year we published[1] a list of official pharmacopœial titles of foreign proprietary drugs now produced by British manufacturers The General Medical Council has now approved names for further substances which are produced, or are likely shortly to be produced by British manufacturers, in some instances under licences granted by the Comptroller-General of Patents, Designs and Trade Marks These substances have hitherto been *known under other names* *The question of including* these substances in the British Pharmacopœia is under consideration, and if any of them is included the intention is that the approved name given below will be its official title.

Approved Name	*Proprietary Name*
Diodone	Perabrodil
Diphenan	Butolan
Dithranol	Cignolin
Hexazole	Triazole (Azoman)
Mesulphen	Mitigal
Pholedrine	Veritol

It is hoped that these approved names will be generally *adopted*

WHY NOT NOW?

IMPORTANT tasks lie to hand which we simply cannot afford to put aside till after the war[2] Regionalisation of hospital services is one of them In his letter to a conference at Liverpool, Lord Derby pointed out that though the future may alter details the broad principles of regionalisation transcend the war (His words have an added poignancy in view of the desperate straits in which some of the Liverpool hospitals now find themselves owing to the air peril Pending the great scheme to replace the four branches of the United Hospital by one large hospital with medical school attached, it seems possible that on financial grounds two of the branches, removed to outlying areas, may have to close down) The conference, which met at the suggestion of the Nuffield Provincial Hospitals' Trust, was attended by representatives of the Liverpool Hospitals joint advisory committee, of twenty-one local authorities, and of forty-seven voluntary hospitals from the proposed region which covers North Wales, takes in Liverpool, Bootle and Preston, and extends as far north as Carlisle Mr W M Goodenough, chairman of the trust, recalled that in 1937 the Sankey Commission had urged the regionalisation of voluntary hospitals in the interests of economy and efficiency, and at Oxford Lord Nuffield had provided the money to start a joint hospitals board on the lines suggested by the commission, but with the difference that the coordination of the public-health authorities with the voluntary hospitals was stipulated The experiment had been a success and in 1939 Lord Nuffield had endowed the trust with a million Morris Motors ordinary share units to implement the scheme throughout England, Scotland and Northern Ireland The income of the trust is to be used for administration and grants in aid, and the organisation will consist of divisional councils, each covering a large area and providing most important services, regional councils on each of which two or more divisions will be represented, and a central hospitals regionalisation council, on which all these bodies would be represented Despite the war rapid progress had been made in setting up divisions and regions in various parts of the country They aimed not at a state system *but* at a *national system working in* liaison with the Ministry of Health and based on local self-government

Sir Farquhar Buzzard, chairman of the medical advisory committee of the trust, said he had found an encouraging consensus of opinion in favour of the scheme among laymen and doctors Any scheme of regionalisation must provide all classes with easy access to the best that modern medicine and surgery had to offer Today on economic grounds the more expensive and specialised methods of investigation as well as teaching and research must be centralised in key-hospitals, and in each region it would be the task of the medical advisory committee to arrange a proper distribution of services Other problems, to be solved by good will and understanding and cooperation, were the remuneration of medical staffs in the voluntary hospitals, state subsidies and the extension of insurance and contributory schemes Mr S P Richardson, chairman of the provincial hospitals' regional committee, said there need be no interference with local tradition The essence of the scheme was a partnership to give a better health service

In the lively to-and-fro of the general discussion which followed these speeches possible difficulties of detail emerged would infectious diseases' hospitals come within the scheme (they have not so far), would a local authority have the power to make contributions for administrative expenses to a non-statutory body like a regional council, would the best medical staff tend to concentrate in the central hospitals to the detriment of the outside hospitals, would voluntary hospitals still be allowed a preferential position in regard to training nurses and patients? Sir Farquhar replied that each region must resolve its own difficulties but the idea was to distribute rather than concentrate consultants While the principle of regionalisation was generally accepted the conference, at Prof Henry Cohen's suggestion, adjourned for the representatives to secure a local mandate

Public Health

Whooping-cough in Glasgow

THERE is nothing unusual about the recent epidemic of whooping-cough in Glasgow, nor anything exceptional about its fatality for young children If the former is inevitable the latter should be a continual spur to medical endeavour In Glasgow the disease is more or less prevalent every second winter During the past winter the rise began in mid-October, 1940, gradually increasing until the new year Like measles it travels through the city from one district to another, but now it is general with a weekly average of 600 + new cases The total number of cases registered in the first six months of recent years is as follows —

1933–34	3117	1937–38	1388
1934–35	10 691	1938–39	9453
1935–36	2106	1939–40	305
1936–37	6645	1940–41	8800*

* estimated

Sex- and age-distribution for the first sixteen weeks of this year may be compared with the corresponding figures for 1939 —

—	1941		1939	
	Males	Females	Males	Females
	Per cent		Per cent	
– 1 year	7	7	8	9
– 2 years	9	10	11	10
– 5 ,,	33	31	33	32
– 10 ,,	49	50	46	47
– 15 ,,	1	2	2	2
15 + ,,	1	—	—	—

from which it may be observed that whooping-cough is very common in younger school-children In so far as it can be reasonably computed for the current epidemic the case-mortality is 3 6%, being highest at the youngest ages under one year 22%, under five years 4 6% What Lord Horder calls a troglodyte existence cannot be said to have anything to do with the incidence or fatality, as shelter life plays little part in Glasgow

From the Annual Reports

HORNSEY AND EAST HAM

The reports of two boroughs of the outer ring of the metropolis, Hornsey (R P Garrow, M O H) and East Ham (Malcolm E Barker, M O H) make an interesting comparison, for the units are widely different in character Their death-rates were nearly the same, distribution of unrationed foods was often unfair and that couponless meals in restaurants had a bad psychological effect

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[1] *Lancet*, 1940, **1**, 804

[2] Lord Horder in the *Sunday Times* of April 20

The Honourable Ladies' Prayer

Mrs MAVIS TATE who moved the annulment of the Personal Injuries (Emergency Provisions) Act 1939 said she did not do so as a feminist, but because she believed the regulations were unjust and if an injustice is allowed to continue in the body politic it is detrimental to the moral health of the nation In 1939 the Minister had said ' Pensions will be awarded on Service lines that is to say in accordance with the medically certified degree of physical disablement Again, wages or earning will not ordinarily enter into consideration " The first regulations, which were afterwards withdrawn, awarded 20s a week to a single man and 18s a week to a single woman In the second group of regulations a single man injured at home was awarded 35s a week This remarkable increase was the result of representations made by trade-unions According to the present rates of compensation a woman over 18 injured in war work is awarded 28s a week for the period of her disablement, or a weekly life-pension of 24s 2d if she is permanently 100% disabled, while a man receives 35s and 34s 2d respectively Dr E SUMMERSKILL who seconded the motion said that for the first time in history women were being registered for war work, and many were going to work in vulnerable areas Were they to find they were not being treated equally with the men who worked at their side ? Mrs A HARDIE pointed out that even the occupations traditionally considered suitable for women were dangerous today, when nurses were looking after their patients at the risk of their own lives Sir FRANCIS FREMANTLE thought the principle underlying the case was whether men were to continue to be responsible for their families—though he admitted this did not cover single men , and Sir HENRY MORRIS-JONES contended that the disparity between the figures for single men and women was too great In reply the Minister said that he had enjoyed the debate He stoutly defended his regulations which were based on the new Workmen's Compensation Act, but instead of assessing each case separately he had taken an average which worked out at 35s for men and actually at considerably less than 28s for women He felt it was not his fault that women in industry are not paid as much as men and that the Government had done as much as it could be expected to at the moment On a division 30 voted for the annulment and 80 against Which seems to show that the next best thing to marriage is a good trade-union

QUESTION TIME

Employment of Alien Doctors

Miss RATHBONE asked the Minister of Health whether, in view of the considerable number of fully qualified foreign doctors in this country, many of whom had been repeatedly tested as to their political reliability, yet were without employment, and some of them a charge on public funds, he would consider deferring arrangements for the bringing over of American doctors to this country until these doctors had been absorbed in the medical service —Mr E BROWN replied The American doctors are needed mainly for service with the Forces, whilst alien doctors of the European nationalities covered by the Medical Practitioners (Temporary Registration) Order, 1941, are needed mainly for employment in civil hospitals and institutions The employment of the two classes can therefore proceed concurrently

Miss RATHBONE then asked the Minister if he had considered the case of a doctor of German extraction, entitled to practise in this country and classified, after repeated inquiry, as a victim of Nazi oppression who held a position in a hospital under the Ministry under a contract of service, was interned last June under the policy of general internment , was released in November , but has nevertheless failed to secure further employment, and had been refused payment of the unexpired five months period of his contract which, for no fault of his own, he was unable to fulfil , and whether he would say what he was prepared to do about this man —Mr BROWN I am glad to say that, owing to a recent vacancy in the Emergency Medical Service, it has been possible to offer an appointment to this doctor at the same salary as he received before his internment

Colonel ARTHUR EVANS asked the Minister how many friendly alien and allied [illegible] special qualifications were still unemployed , how many Czechs with medical degrees in their own country were now studying for English degrees , whether this necessity must now be imposed on qualified men, particularly since special scholarships had to be granted to enable them to study whether there was a surplus of army doctors with the Czech army , and whether, in view of the shortage of doctors, particularly in reception areas the fact that alien doctors were barred from private practice, and the appeal that had been made to the United States of America for 1000 doctors to serve with the British Red Cross, he would take steps immediately to absorb all unemployed doctors, irrespective of nationality, and permit alien doctors already qualified in their own country to practise without taking English degrees —Miss F HORSBRUGH replied I am not in possession of the information requested in the first, second and fourth parts of the question [1] As to the third and fifth parts the Medical Practitioners (Temporary Registration) Order, 1941, provides a wide field of employment for American and allied alien doctors and refugee doctors of enemy nationality in hospitals and other approved institutions without the necessity of obtaining British medical qualifications, and their absorption into this service is proceeding steadily I am advised that linguistic and other difficulties make it inadvisable to allow these doctors to engage in domiciliary practice

Destroyed N H I Cards

In answer to a question Miss HORSBRUGH said that many stamped National Health Insurance cards have been lost or destroyed by enemy action To minimise the risk of loss of benefit all approved societies and local authorities have been advised of the simplified procedure to be followed in reporting such loss or destruction to the central department, so that credit may be allowed for the missing stamps with the utmost speed

No Extra Rations for Pregnant Women

Dr A B HOWITT asked the Parliamentary Secretary to the Ministry of Food whether he would consider the advisability of granting an extra half ration of butter and an extra half ration of sugar to all pregnant women for the last six months of the pregnancy, and for six months after delivery if the mother was nursing her baby —Major LLOYD GEORGE replied Consideration has been given to these suggestions, but the food rationing (special diets) advisory committee of the Medical Research Council consider that no extra allowances of any rationed food are necessary for expectant mothers A child's ration book is issued by the local food office as soon as a birth is notified, the rations obtainable with this book being intended for the use of the mother

Special Food for Young Children

Mr G MANDER asked the Parliamentary Secretary if he was now able to make a statement with regard to his proposals for dealing with the special needs of young children requiring such food as eggs and fruit and whether these would be made available through clinics or through some other channel.—Major LLOYD GEORGE replied A statement will be issued on this subject as soon as possible

Dr HADEN GUEST Is the Minister aware that the black currant, which is a heavy cropper in this country, can supply the same vitamins which is supplied by oranges , and will he take steps to see that this source of vitamins is reserved for the young children in view of the shortage in the supply of oranges ? Major LLOYD GEORGE That question is now under consideration

Children Under Five

Miss RATHBONE asked the Minister of Health how many children were attending the 37 special day nurseries set up for women employed on war work , and what was the average cost per child per week falling on public funds —Mr BROWN replied I have now approved the provision of 40 day nurseries for the children of war workers with 1561 places It is estimated that the cost to public funds will on the average be approximately 2s a day for each child but exact figures will not be available until the nurseries have been in operation for some time of harvest with its aftermath of hoarding, tailing off into winter's fear again ? Does man pay a heavy price for disregarding these tidal waves of emotional cleansing ? Was that convulsion I saw an artificial hunting in the undergrowth, the delirium that precedes migration, the icy fear of starvation that comes with snow ? Were sanity, balance, reasonableness only occasional interludes between seasons in man's forming ? By madness do we pay for disregarding the heavenly rhythm—dawn, noon, sunset growing tension, orgasm, release ? Is this the cost of aping the equanimity of the gods ? Can it be ? Is it ? Can't the anthropologists ? One is so abysmally ignorant Anyway the boy seems quite normal today

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[1] In a letter to the *Times* of May 7 Prof Samson Wright chairman of the medical department of the Central Office for Refugees said that the office has particulars of 1400 refugee doctors eligible for admission to the Medical Register under the temporary registration order These include 750 from Austria Germany, and Italy 250 from Czechoslovakia and 350 from Poland Up to the end of March 1941, 17 Germans and Austrians and 12 Czechs had found employment, by the end of April he said, the total may have risen to 100

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The review of Sylvia Anthony's "The Child's Discovery of Death" in THE LANCET of April 26 reminds me of a story told me by the late Sir Henry Head when I was his house-physician Head stayed for a week-end with some friends who had spent an immense amount of time and thought on the upbringing of their child, a little girl of seven All knowledge of death was to be hidden from her till she had reached an age when she could understand it All visitors to the house, and all those in daily contact with her, were warned and forbidden to mention the fact of death in her presence, and no story-book was allowed to be read to her in which there was any reference to it These theories were fully propounded to Head on the first evening of his visit The next morning he was woken up long before anyone was about by someone tugging at his beard He found the small daughter of the house standing by his bedside, and in a hushed whisper she said, "Dr Head, Mummy says you know all about everything, can you tell me where I can buy methylated spirit ? My lizard's dead, and I want to preserve it It's no good telling Mummy and Daddy—they don't understand these things"

* * *

The other night the little town where the battalion is billeted got it They were evidently trying for the docks some miles away, and it is easy to imagine the German pilot officer's report when he got back "First we dropped incendiaries, setting several wharves and ships alight, then we dropped H E to finish off the job Volumes of thick smoke showed that our bombs had got the oil tankers Heil, Hitler!" So much for fiction, now for fact "A large number of incendiaries were dropped in the fir woods setting alight not the trees themselves—they were too damp—but the dried pine-needles on the ground Large volumes of smoke arose Several high explosives were dropped somewhere near these fires, all in the woods except two which fell just short of the tenth green and have made a perfect bunker God save the King!" About eight platoons were called out to fight the fires It was a splendid Saturday night and everyone had great fun getting lost in the pine woods and shouting out his bearings The messing officer was happily employed getting his cooks up to make cocoa, in the dark, for the fire fighters The orderly officer telephoned to the mess to know whether the medical services were "running smoothly" The medical services were playing snooker against the C O and the mess president, and judging by their score were running very smoothly indeed

It was lovely in the pine woods—the fairyland of childhood seen at last Hundreds of Christmas trees with electric lights glittering through them and twinkling on and off One bit of the ground would take fire, then another, then another, as quickly as that, and as soon as a new fire, no bigger than a man's hand, broke out an older one would be smothered by the soldiers The best sight of all was the reflexion of the fires in the windows of a big house on the outskirts of the wood As some fires died and others sprang up the windows changed colours and the house itself seemed to melt and grow again, like a castle in a dream First the fires shone only in the lower windows, and it looked long and low and strange, then, as some of the reflexions were obscured by smoke it dislimned into two shadowy cottages And then the upper windows took the light and it was an ark floating on a cloudy sea Yes—that was an evening to thank the Luftwaffe for

Parliament

LAST week in the House of Commons Major LLOYD GEORGE, parliamentary secretary to the Ministry of Food, had no easy task in defending the policy and administration, but as he reminded his critics the Ministry was dealing with a very sensitive part of the human anatomy Not only is the Ministry the largest trading organisation in the world, with accounts of over £600 million a year, but it must also deal with important social and economic problems The department, he said, did not resent criticism, but could only distribute such food as it could acquire In peace-time more than half of our food came from overseas, and of the other supplies, rather less than a half could be produced only through imported feeding stuffs and fertilisers Leaving vitamins and carbohydrates alone and sticking to calories, which he claimed was safer and simpler, Major LLOYD GEORGE said that only a third of our needs was produced at home There was no shortage of food in the world, the difficulty was to get it here The Government has therefore restricted imports to essential commodities such as meat, sugar, tea, oils and fats All these commodities, together with cereals and pulses, animal feeding-stuffs, condensed milk, milk powders, eggs, tea, dried fruits and fruit pulp, were now purchased by the Ministry There was no comparison between the price-level of foodstuffs today and that in the last war and he claimed that on the whole the system of control was achieving equitable distribution at reasonable prices The state was spending about £90 million a year in subsidising food

The Ministry was fully alive to the importance of preventing the breakdown of food-supplies in heavily bombed areas and of providing emergency feeding-centres where people who cannot cook meals in their own houses can obtain hot meals The Ministry had received applications from 114 towns with a total population of 16 million So far 299 communal restaurants in 156 towns had been approved in addition to 170 London meals' centres operated by the L C C and 280 evacuee centres taken over by the Ministry of Health and now open as British restaurants to the general public This made a total of 749 and the average number of meals served daily was over 82,000 Referring to the new milk scheme Major LLOYD GEORGE explained that the Ministry expected distributors to continue distributing milk for seven days a week where that had been the practice From now on there would be no cuts in the milk-supplies of people who took one pint or less per day The scheme did not affect the priority classes, such as schools, hospitals and invalids Domestic needs would be given preference over the demands of catering establishments

Summing up his case he claimed no perfection for his Ministry and frankly admitted that mistakes had been made But every effort was being made to set those mistakes right

The general discussion ranged from important details to important principles Mr G MUFF, for instance, had had a charming letter from the Parliamentary Secretary which, he averred, had almost made him want to chirp Mr McKINLAY deplored how often the important memoranda of the "boys in the backroom" at Colwyn Bay quickly changed into "confidential wastage," and confessed himself appalled by the underworld of egg distribution Sir E GRAHAM-LITTLE returned to his attack on the Government bread and said that when he heard it called the "doctored loaf" he felt it was an insult to his profession Many members were not altogether happy about non-rationed food in restaurants, and Mr CLEMENT DAVIES said he had never seen his ration card since it was issued and yet had never wanted for food Major Lloyd George had assured the House that only a thirteenth of the total meat-supply is consumed in public eating-houses, but Miss E RATHBONE wanted to know what proportion of other foodstuffs was consumed there Mr D L LIPSON told of delays in setting up communal restaurants and of difficulties in obtaining food for school canteens Mr J R CLYNES regretted that there was no equivalent to the consumers' council of the last war On the whole the House thought that so far the nation had been well fed, but that the upied by men suffering from recurrent boils and it s noted that almost invariably the first boil appeared er the man was infected with scabies or pediculosis pons As at present scabies was then very prevalent ongst the civil population Mr Dodd holds the view it the mode of spread by infection of the hair follicles negligible and in favour of this contention cites the t that he has not observed recurrence after the treat- nt of boils with sodium-sulphate solution , but most geons are familiar with the unfortunate patient who s had a boil treated with a poultice or boric fomenta- n and then presents himself for the treatment of merous boils in the near neighbourhood of the original il I do not undervalue other sources of infection, ch as nasopharyngeal sepsis, or the rôle of the resisting wer of the patient but I do plead for a thorough amination of the skin surface

Sheffield 6 **RUPERT HALLAM**

MALARIA ON BOARD SHIP

SIR,—I was interested to read the letters of Dr Hutton d Colonel Everard Napier (Nov 9) and of Dr Manson- ahr (Nov 30) in connexion with subtertian malaria in erchant ships At Dakar early in the war I was called er to a tanker which had been involved in a collision d saw two cases of subtertian malaria which were con- med by several microscopic examinations This ship ring to its inflammable nature was not allowed by the ench authorities anywhere near other shipping so at it was anchored well out beyond the roads 3–4 les from shore and fully 2 from the nearest other ship either of these men with malaria had ever been ashore Dakar,,and neither had had malaria before, while the ip had not recently called anywhere where malarial fection would have been likely to be contracted I ink the most likely explanation in these cases where e distance from shore is much greater than at Freetown that the mosquitoes are carried on board by personnel ming from shore, either on their clothing or more robably with food-supplies or other material which is ontinually passing to and fro

The other point of interest is the extremely high per- entage of cases of malaria at Freetown which are of the ubtertian variety—probably about 75% The fact that o many of these cases are atypical and may simulate uch a variety of medical and surgical diseases makes the iagnosis without the aid of a microscope exceedingly ifficult unless one continually bears in mind the prob- bility of malaria as a diagnosis in ships which have at ll recently been to the West Coast

At sea **MARTIN STRATFORD**

HYPEREMESIS GRAVIDARUM

SIR,—In connexion with your leader of April 12 I hould like to recall a paper which I wrote nineteen ears ago in THE LANCET (1922 1, 528) on the hysterical ature of so-called pernicious vomiting of pregnancy nd was taken up in your correspondence columns I gree that hyperemesis develops from persistence and exaggeration of the physiological early morning sickness of pregnancy but I am convinced that this persistence and exaggeration are always the result of hysteria and can always be cured by simple psychotherapy in the form of explanation and persuasion without resort to the rastic treatment recommended by Fahmy With imple psychotherapy the mortality is nil in contrast ith the 37 deaths in 809 cases which occurred in the st seventeen years at the Royal Infirmary Edinburgh n the ten years 1929–38 there was not a single death rom this cause in Guy s Hospital and its maternity istrict among approximately 14 000 deliveries, and Mr S Fairbairn told me in 1922 that he agreed with my onclusions and that he had not seen a fatal case in the revious ten years

The "dehydration raised pulse-rate, depletion of urinary output, dry, furred tongue sore mouth and ordes about the lips, ketosis, anxious facies, icterus, albuminuria, loss of weight, lowered blood-pressure insomnia and mental symptoms " are a result of the vomiting and ought never to be allowed to develop have however, seen them all disappear within a few hours of persuading an apparently moribund patient to make the necessary effort to keep down all the food and drink of an ordinary full diet, without giving the bromides or luminal, intravenous fluids and colonic lavage recom- mended by Fahmy Nor should it be necessary to empty the uterus, and this was never done in any of the cases I have seen, nor in those of Mr Fairbairn

Oxford **ARTHUR HURST**

TREATMENT OF PRESBYACUSIS

SIR,—Six years ago you published (*Lancet*, 1934, 2, 306) a short paper in which I gave results of treatment with the electrophonoïde method of Zünd-Burguet in 31 cases of presbyacusis Since that time I have completed a hundred cases (47 men and 53 women), showing 100% of successes There appears to be an association between certain forms of deaf-birth, some anomalous and insidious cases of chronic deafness occurring in middle-age. and true presbyacusis a connexion which opens up a fresh field in the treatment of chronic progressive deafness Unfortunately, research is wanting in the pathology of presbyacusis, but there is an undoubted connexion between it and chronic intestinal toxæmia which suggests a solution of the difficulty. Electrophonoïde treatment in conjunction with suitable general treatment, has, in my hands, given excellent and lasting results The reason for this success is simple and rational since it lies in its effect upon the vascular supply of the auditory organ

The degeneration of the nerve arrangements of the organ of hearing generally is due largely to the fact that its blood-supply is one of the circulatory back-waters in the body The cochlear artery is small and with a lessened force to pump the blood through the organ it supplies that organ must inevitably suffer in nutrition The massage effect of the electrophonoïde apparatus is the ideal method for dealing with the condition, massage by sound being its essential basis and the normal stimulus of the ear. It causes an active hyperæmia throughout the whole organ resulting in increased nutrition of the cochlea

Gerrard s Cross **MACLEOD YEARSLEY**

ESERINE AND PROSTIGMIN

SIR —I am grateful to Dr Laurent for his observations on the equivalent doses of eserine and Prostigmin and for having reported the occurrence of epileptic fits after administration of prostigmin to a myasthenic I agree that the doses of eserine and prostigmin used by Russell and myself were not in every case strictly comparable but it is difficult to determine the equivalent amounts of drugs with such far-reaching effects as the anti-cholinesterases, especially as they seem to vary with the site of action under examination We took as our criterion the presence or absence of early symptoms of autonomic overaction, such as sweating, flushing, salivation, nausea and abdominal discomfort The dosage needed to induce these symptoms varies greatly from case to case, but they are produced by the direct action of the drugs on normal synapses and nerve-endings Since evidence has been accumulating that eserine and prostigmin may have a central action we thought it better to use this effect as an index instead of the actions on the abnormal myoneural junctions of the myasthenic Equivalent doses of prostigmin and eserine may have a similar action on epilepsy although Schweitzer, Stedman and Wright (*J Physiol* 1939 89, 165) thought that the opposite effect of the two substances on conduction in the spinal cord was due to a difference in their physical properties Realising these difficulties and the complicated side actions of the anti-cholinesterases I have since used acetylcholine and other choline-like substances, and the results (*J Neurol Psychiat* 1941, 4, 32) are in line with the previous observations and include the occurrence of a fit after intravenous injection of acetylcholine to an epileptic patient

Oxford **DENIS WILLIAMS**

MEDICAL PLANNING

SIR,—The Sutton and District Medical Society have at recent meetings been giving much time to discussion of the problems that lie ahead in the organisation of medical services In this letter we wish, as a body, to bring our views before the profession and to give expression to doubts and dissatisfactions that we believe to be widespread We are a society of 60 members comprising general practitioners, medical officers of

Rear Admiral T P H **BEAMISH** asked the President of the Board of Education what was the average number of children attending the 86 nursery centres, the age range of the children, and the ratio of trained and voluntary staff at each centre —Mr **HERWALD RAMSBOTHAM** replied It is not possible to give the number of children in attendance at these centres, but they provide accommodation for about 2700 children The age range of the children is from 2 to 5 years Local authorities are not asked to supply particulars of the voluntary helpers appointed, but there are at present about 50 teachers working in the centres, the majority of whom are trained One teacher may, of course, have charge of several centres

Mr **DAVID ADAMS** asked whether substantial progress was now being made in the provision of additional nursery centres and nursery schools —Mr **RAMSBOTHAM** replied The number of nursery centres approved has risen from 15 in December last to 94 today It is not contemplated that additional nursery schools should be provided during the war

Central Medical War Committee Staff

Mr T E **GROVES** asked the Minister of Health how many members of the staff of the Central Medical War Committee were whole time employees of the committee —Mr **BROWN** replied Staff are provided for the work of the committee by the British Medical Association and are not employees of the committee

Letters to the Editor

EVACUATION OF ARMY CASUALTIES

SIR,—Your special article and leading article of May 3 raise very important problems It is astonishing that the R A M C authorities did not consider the medical history of the Spanish War worthy of close study That war clearly served as a dress rehearsal for the Axis Powers in the use of modern tactical methods, yet the tactical dispositions of our general staff and the organisation of the R A M C seem to have remained unaffected by it Moreover, even since the start of the present war development has been painfully slow The R A M C, which by now should be perfectly adapted to the demands of modern warfare, is still too deeply rooted in the tradition and requirements of the last world war —its inability to deal effectively with many of the difficulties that arose in Norway, Flanders and France has been too light-heartedly explained by the unexpected nature of military movements in those countries The lack of interest in the medical history of the Spanish War becomes even more inexplicable when one remembers the important advances in traumatology that have been due directly to the efforts of Duran, Trueta, Tudor Hart, Jolly and others, all of whom gained their experience in Spain Now that alterations in the organisation of the R A M C are at last being advocated from lessons learnt in Spain, it is surprising that the alterations, admirable as they are, should be confined to such a limited field Surely the issue is now, not whether one small link in the field casualties may or may not be abolished but whether the time is not ripe for a comprehensive revision

It would be impossible to outline in this letter the whole course of development in the Spanish medical services Furthermore, it must be stressed that during the whole of the Spanish War the organisation of the medical services remained fluid, adapting itself to the new exigencies of the military situation The author of your special article successfully deals with one of the phases in this development, he does not attempt to show the further evolutionary possibilities which were inherent in the Spanish organisation The general principles which served as the basis for the development of the medical services in the Spanish Republican Army were as follows —

1 There was at all times complete liaison between the medical and military authorities This was at times so close that it amounted to a virtual unity of both commands It extended through the whole chain of the military organisation, from the general *staff down to the regimental medical officers*, who were kept fully informed not only of the operative plans but also of the military perspectives, such as the chances of success of any given operation, and the consequences that success or failure would entail

2 The medical services were not built on any and rigidly determined lines, but were given full scope develop and grow freely In such a way the constant elasticity which is essential in modern warfare was maintained It is significant in this connexion that the few professional military medical officers in the Republican army were disappointing, and were soon replaced by young doctors who were innocent of the regulations

3 An opportunity for full analysis and discussion was always given as soon as possible This was done by means of magazines, special circulars and frequent conferences between all the medical personnel The criticism, which dealt successively with every operational phase of the war, was at times devastating, but it never failed to achieve some improvement

4 The scarcity of material and personnel ensured that the most economic use was made of both

5 The personnel regarded their interests as identical with those of the army as a whole The fundamental principle of *their work was not to return* as many men as possible to the lines but to help their fighting comrades to the utmost of their ability I heard recently during a lecture given by a R A M C officer the following expression "The more serious the casualty the less notice we take of him, because the less likelihood there is of him returning to the lines"

6 The Spanish medical services included foreign doctors who had the advantage of being able to draw on the military and medical histories of many nations Thus the medical history of the Great War and the subsequent research in traumatology done in England, Austria, the U S A, Spain itself, and particularly the U S S R were all fully used

The experience of the Spanish War, instructive though it was, is already inadequate, and cannot be applied directly by itself to the present war Many campaigns have been fought since, and a tremendous amount of research done, and these will have to be taken into consideration when revision of our present military medical organisation is undertaken, but the fundamental principles evolved in Spain still retain their validity

L CROME,

London, S E Late D M S XV Spanish Army Corp

NARCOLEPSY

SIR,—In his letter of April 19 Dr Nattrass suggests that Kinnier Wilson's observation of an extensor plantar response during a state of cataplexy was erroneous He quotes in support of his belief a personal note written by the late Dr Adie Since unfortunately Kinnier Wilson can no longer testify on this matter, I hasten to affirm that I too was present when this patient sustained his cataplectic seizure and that there can be no doubt about the genuine character of the extensor responses In his "Modern Problems in Neurology" Kinnier Wilson clearly said "   Dr Critchley had hurriedly taken off the patient's shoe and sock on the left side, and testing the plantar reflex obtained a slight but definite extensor response, which he demonstrated to me and which I corroborated" The fact that Kinnier Wilson was not alone in the examination of the patient explains the fact—which surprised Dr Wilson Gill—that so many observations could be made within the short space of ninety seconds

MACDONALD CRITCHLEY

BOILS

SIR,—In expressing his views as a general surgeo (*Lancet*, April 26, p 558) Mr Dodd ignores the si ficance of various skin infections in the [illegible] boils As I agree with his statement "that a co structive attitude towards their ætiology, pathology treatment is still lacking in certain of our profession I again draw attention to a relatively common cause recurrent boils Examination of 98 consecutive c (Hallam, *Brit med J* 1932, 2, 670) revealed the presenc of a concurrent skin infection in 31 Of these 1 had pruritus ani, 9 scabies, 4 impetigo, 2 pediculo corporis, 1 whitlow, 1 oil acne, 1 perlèche, 1 otitis media, 1 abscess I do not claim that in all these the infection mentioned was necessarily the direct cause of the boil, *but I feel it is impossible* to deny that it may have been

Mr Dodd mentions the frequency of boils during the last war I had charge at that time of a number, some times 100, military beds for the treatment of skin diseases A considerable proportion of the beds was bad job In June 1915 he was released and the following month he returned to France where he remained until 1917 when he was sent to Macedonia He retired from the army with the rank of lieut -colonel in 1922 and almost at once took up his work at Bristol Dr Hubert Bristowe chairman of the committee of the mission, has written of him Collingwood was a sincere Christian and a sympathiser with the poor and suffering Thus he won for himself a strong place in the affection and esteem of his patients as well as of the staff and committee He not only attended to the physical welfare of his patients but also to their spiritual needs He never troubled to get a " tin hat " and walked about during at least one of Bristol's heavy attacks bareheaded, remarking " The Lord will take care of me " He was a saintly man of simple and supreme faith

THOMAS HOOD WILSON ALEXANDER

M B EDIN F R C S E

Dr T H W Alexander who had practised in Elgin nce 1901, died in Aberdeen on April 29 aged 63 He as born at Perth, was educated at Edinburgh University where he graduated M B in 1900, and he also udied in Berlin He served as a captain in the A M C in the last war both in this country and in alonika After the war he obtained the F R C S E and addition to his general medical work at Elgin he ractised as a surgeon drawing his patients from most the north of Scotland He had many interests outde his profession He was a J P for Morayshire and e gave much of his time to work with the old school oard and, later, with the Morayshire education authority, f which he was chairman until the introduction of the ocal Government Act in 1929 Dr Alexander had also any commercial interests, the chief of which was his hairmanship of the directors of Caledonian Associated inemas Ltd which he founded and which has houses cattered from Thurso to Galashiels He leaves a idow one son and two daughters

Medical News

niversity of Oxford

At a congregation on May 5 the following degrees were onferred

D M—C W Simpson
B M—J C Herapath and E C Hoff (in absentia)

Sir Walter Langdon-Brown will deliver the Linacre lecture o St John's College, Cambridge, on Friday, May 30, at 5 15 P M The title of the lecture will be From Witchcraft to hemotherapy

The 105th annual general meeting of the Royal Medical Benevolent Fund will be held on Wednesday, May 14, at noon, at 1, Wimpole Street, London, W 1 Sir Thomas Barlow, F R S, the president, will take the chair

In recent casualty lists Temp Lieut Colonel J C Mackay, M B Edin, R A M C, is posted as prisoner of war and Captain W J Young, M B Camb, I M S as wounded

During May Dr A J E Cave will give six anatomical lecture demonstrations at the Royal College of Surgeons of England, Lincoln's Inn Fields, London, W C 2 The lectures are open to all medical practitioners and senior medical students At the first, on May 16 at 4 P M, Dr Cave will speak on the orbit and its contents

On Tuesday, May 13, at 2 30 P M Lieut General A G L McNaughton, president of the National Research Council of Canada, will read a paper to the Royal Society of Arts on Research in Canada The meeting will be held at the Institution of Electrical Engineers, Victoria Embankment, London, W C 2

At the first meeting of the Bristol and District Divisional Hospitals Council it was announced that grants of £1000 from the Nuffield Provincial Hospitals Trust and of £1350 from the Bundles for Britain Fund had been received The council has 88 representatives and seeks to coördinate the voluntary and municipal hospital services in Bristol and district and eventually throughout the west of England It was decided at the meeting that a survey of the medical and auxiliary medical institutions in the area should be made

The Robert Jones medal and prize of the British Orthopædic Association for 1940 have not been awarded

Lord Horder has been elected president of the Cremation Society in succession to the late Duke of Bedford He will continue to act as chairman of the council, a position he has occupied for the past six years

A meeting of the Association of Industrial Medical Officers will be held at the London School of Hygiene, Keppel Street, W C 1, on Saturday, May 17, at 2 30 P M, when Dr M L Dobbie Bateman, Miss F I Taylor, Dr L S Swanston and Dr Graves Peirce will open a discussion on the employment of women in industry

The Fellowship of Medicine will hold the following courses in preparation for the next M R C P examination chest diseases at the Brompton Hospital on Mondays and Thursdays, 5 0 P M (May 26–June 19), nervous diseases at the West End Hospital for Nervous Diseases, Tuesdays and Fridays, 3 30 P M (May 27–June 20)

At the annual general meeting of the Medical Sickness Annuity and Life Assurance Society, held in London on May 5, with Dr F C Martley in the chair, it was reported that new business during the year amounted to 40 per cent of the pre-war figures In both the life and the sickness departments the claims had been heavier as a result of the war and of influenza in the early part of 1940, in a single month £10,000 had been paid out under the latter heading A further £50,000 had been transferred to the war emergency reserve, making the total fund £150,000, to provide for the heavy fall in the value of assets Holding of British Government securities had been increased from £212,824 to £387,366 The quinquennial valuation was due at the end of 1941, and while hopeful of satisfactory results Dr Martley warned members not to be too hopeful of bonuses

Short papers will be read at the sections of dermatology and of obstetrics and gynæcology of the Royal Society of Medicine at their meetings at 4 30 P M on May 15 and 16 respectively At the section of neurology, on May 15, at 5 P M Dr W Russell Brain will speak on visual disorientation resulting from lesions of the right cerebral hemisphere and Dr Graham Weddell on the pattern of cutaneous innervation and its relation to cutaneous sensibility On May 2, at 5 P M Sir Hugh Lett will address the section of urology on forty years' experience of urology On May 23 at the section of epidemiology and state medicine Dr P B Beeson will read a paper on the prevalence of trichinosis in man Prof R T Leiper, F R S, Dr W P Rogers, Dr P Clapham, Mr J W G Leiper and Miss M Young will also speak At 5 30 P M on the same day Dr M H Jupe will deliver his presidential address to the section of radiology on problems of skull radiology

Births, Marriages and Deaths

BIRTHS

FERGUSON —On May 1, the wife of Dr S H Ferguson, of Ipswich —a daughter

MARTYN —On April 29, the wife of Dr M King Martyn, of Cheltenham—a daughter

RODGERS —On May 1, at St Albans the wife of Major H W Rodgers R A M C—a daughter

MARRIAGES

BAILIE—LETT —On May 3 in London Hugh Cochrane Bailie M B, captain R A M C, to Joan, youngest daughter of Sir Hugh Lett Bt P R C S

MARR—DAVY —On April 26, at Limber Magna, C Ogilvie Marr, M B, to Pamela Davy

VICKERS—PECK —On April 19 at Paddington Henry Renwick Vickers M R C P surgeon lieut -commander R N V R., of Sheffield, to Penelope Evelyn Peck

DEATHS

ALEXANDER —On April 29, at Aberdeen Thomas Hood Wilson Alexander M B Edin F R C S E J P

AVELING —On May 4 in Cambridge Leslie Baldwin Aveling M B Camb of Brockford Suffolk aged 63

GULLAND —On May 4 in Edinburgh George Lovell Gulland C M G, M D, LL D Edin, F R C P E

GWYNNE JONES —In April from enemy action Christabel Gwynne Jones M B Lond wife of Surgeon Commander Tudor Gwynne Jones R N

JAMIESON —On May 1 at Sutton Robert Hillhouse Jamieson M D Edin, F R C S E

HARTIGAN —On May 4 at Weybridge John Hartigan, L A H Dubl L M aged 64

KENDRICK —On April 26 at Cheddar Somerset George Wharton Kendrick M R C S captain R A M C retd

ROCHE —On May 6 Redmond Roche B A R U I, M R C S L M of Eccleston Square S W 1 aged 74

WILLMORE —On May 3 William Southwick Willmore M D Durh M R C P D T M & H colonel I M S retd, of Churt Surrey health, specialists and medical women, and can fairly claim to represent all branches of medical opinion in this area of Surrey However divergent our professional activities and interests, we are substantially agreed on the following points —

1 We would welcome such evolutionary changes as might be indicated by past experience and by present and future needs, but we view with some apprehension the suggestion, indeed the threat, of sweeping reorganisation, perhaps without sufficient “ ventilation ” or adequate discussion or debate by the profession as a whole Especially would we regret the handing over of the profession to bureaucratic control, we believe this would be an unhappy change for both the public and ourselves

2 We are impressed by the fact that the B M A is regarded with indifference or distrust by numbers too great to be ignored That such an attitude exists is to be regretted, but we are convinced that this feeling is widespread and very real

3 The Medical Planning Commission is, we think unrepresentative in character and undemocratic in origin

4 In view of the above we must recognise that there does not at present exist any body which commands the confidence of the majority of the profession, or can justly claim to represent it

5 There is therefore an obvious need for such a body, to interpret medical opinion and to speak and negotiate with authority on its behalf

6 The B M A seems to be naturally the body of choice, but essentially a revitalised association, able to attract those of the profession without its gates and inspire those within

We have, in common with many others, constructive proposals to offer as to the direction of medical progress, but it appears to us that the primary necessity is the formation of this body Meantime we consider it of great importance that societies like our own throughout the country, or groups formed for this specific purpose, should bring these matters into discussion, and publish their views in the medical press We feel this would be a real contribution towards the solution of our difficulties

T H WHITTINGTON,
JOHN CRAWFORD,
Hon Secretaries
Sutton, Surrey

SIR,—At a meeting of the Hampshire Local Medical and Panel Committees on April 23 the following resolution was unanimously adopted —

This committee is of opinion that no findings of the Medical Planning Commission as at present constituted should be submitted to the Government for approval without the general approval of the body of the profession through the local medical committees

G A E ROBERTS,
Hon Secretary
Twyford, Hants

GUIDE TO ST DUNSTAN'S —A small pamphlet has been issued for official use explaining what St Dunstan's is for and how patients may be sent to its hospital and training centre in the country The hospital, which has been established for the three fighting services and the Ministry of Pensions, has at the request of the Ministry of Health become an E M S hospital, and full surgical and medical treatment can be given to those who suffer from wounds or conditions of the eye which cause or threaten blindness Ear, nose and throat and facial injuries and minor medical and surgical conditions are also treated there Further particulars may be had from Mr R C Davenport, medical commandant, c/o St Dunstan's head quarters The official instructions describing how service and civilian patients may be transferred to the hospital are included in the pamphlet All persons blinded by enemy action may go to the hospital, but only officers and men and women of the Army, Navy, and Air Force, regular policemen and firemen are eligible for full membership of St Dunstan's, though others who pass through the hospital will receive guidance and help Information about the future care of civilians may be had from the secretary-general of the National Institute for the Blind, 224, Gt Portland Street, London, W 1 Applications for admission to St Dunstan's and pensions queries may be addressed to the secretary at St Dunstan's Head quarters, Inner Circle, Regent's Park, N W 3

Obituary

JOHN SMYTH MACDONALD

B A CAMB, L R C P E, F R S

Prof J S Macdonald, who died on March 29 at his home in Perthshire, had held the chair of physiology in the Universities of Sheffield and Liverpool, and as teacher, administrator and physiologist he served them both well

He was born in Dublin in 1867, the son of George Macdonald, and educated at King's School, Chester, and Emmanuel College, Cambridge, where he took the mathematical tripos in 1889 He studied medicine at the University of Liverpool, but long before he qualified he was doing research in physiology He held the Holt fellowship at Liverpool in 1891 and was demonstrator in physiology there till 1896 The following year he was appointed to a lectureship in the University of St Andrews at Dundee and in the same year he took his Scottish conjoint qualifications In 1899 he was awarded the research scholarship of the British Medical Association Another period of work followed at Liverpool at a time when the university college was negotiating for its charter as an independent university—the partnership of the Victoria University had lately been dissolved And when in 1903 Macdonald was called to the chair of physiology at Sheffield University College, which was also aspiring to university status, his inside knowledge of university foundation stood him and his colleagues in good stead Two years later, thanks largely to his experience and help, Sheffield received its charter, and Macdonald turned his talents to reorganising the department of physiology in the new university He was a vital and enthusiastic teacher and imbued his students with the thoroughness and intelligence which always informed his own research Later, as dean, for many years he guided the young faculty of medicine His judgment of men was sure and showed itself in his selection of candidates for posts in the faculty He was a man of strong views, at times rather hastily expressed, but he was always a loyal and unselfish colleague In 1914 he returned to Liverpool as Holt professor of physiology and here also he became dean of the faculty of medicine His fellow physiologists recognised his work when they invited him to preside over their section at various meetings of the British Association and of the B M A and his papers on the structure and function of nerve-fibres and of striated muscles earned him the fellowship of the Royal Society in 1917 His appointment as successor to his old chief Sir Charles Sherrington gave him lasting satisfaction, and he remained at Liverpool until he retired in 1932 with the title of emeritus professor

Professor Macdonald married Katherine Mary Stewart of Stornoway and they had three sons and four daughters

PERCY HILDEBRAND COLLINGWOOD

L S A, LIEUT-COLONEL, R A M C RETD

Dr Collingwood, who was for almost twenty years medical superintendent of the Bristol Medical Mission, died at Clifton on April 11 He was born in India in 1871, the son of Major-General C Collingwood, and educated privately and at St Thomas's Hospital, where he qualified L S A in 1897 The following year he obtained a commission in the R A M C as surgeon lieutenant and almost at once saw service on the Nile where he was awarded the Queen's and Khedive medals In 1903–04 he was senior medical officer in the Aden operation in the interior and his good work with the Aden boundary commission was commended In 1910 he was promoted major and when the last war broke out he was sent at once to France The same month he was unfortunately taken prisoner, but as his valuable services during his internment proved he knew how to make the best of a

ORIGINAL ARTICLES

ABSORPTION OF BACTERIA, TOXINS AND SNAKE VENOMS FROM THE TISSUES

IMPORTANCE OF THE LYMPHATIC CIRCULATION

BY

J M BARNES,
M B CAMB

J TRUETA,
M.D BARCELONA

(From the Sir William Dunn School of Pathology and the Nuffield Department of Orthopædic Surgery, Oxford)

THE purpose of this paper is to report some experimental findings showing how foreign substances—for example, bacteria and their toxins, and snake venoms—are absorbed from the mesenchymal tissues and carried to the blood-stream It became clear during the course of the work that the lymphatic circulation played an important part in the process, and the paper concludes with some observations on the factors governing the flow of lymph from limbs

CARRIAGE OF BACTERIA

Over 40 years ago it was shown by several workers that bacteria travel from the tissues by way of the lymphatics, and never by the blood-stream (Halban 1897 Manfredi 1899, Noetzel 1906, and Pawlowski 1900, 1909) It is more generally accepted that inert particles travel by the lymphatics alone, and Batchelder, Field and Drinker (1931) found that only extremely few particles of an inert colloidal nickel preparation were absorbed by the blood-vessels of the omentum , this organ is said to contain no lymphatics It might, however, be imagined that bacteria placed in freshly made wounds could enter the blood-stream directly through the open ends of the divided blood-vessels, although theoretically this is unlikely, for blood is either flowing from them or they are occluded by clot McMaster and Hudack (1934) examined freshly made wounds in the ear of the mouse, and under the microscope they could see that the blood-vessels shut down within a few minutes of the injury while the lymph vessels remained patent for over 48 hours, and readily took up a large molecule dye such as pontamine blue We carried out a few experiments that indicate that bacteria follow the same route

Rabbits weighing about 2 kg were used Under Nembutal anæsthesia, one leg was prepared in such a way that no lymph drained from it, while at the same time the blood supply was maintained The femoral vessels were exposed in the groin, and under a dissecting microscope the lymphatic trunks were separated and ligated A stout double linen thread was then passed through the muscles to the back of the thigh, and a mass ligature, including the skin, muscle and bone, was tied on each side of the blood vessels This left the circulation of the limb isolated from the rest of the body except for the femoral artery and vein The vascular circulation appeared to be satisfactory, for bleeding took place from freshly made wounds in the calf of the leg, and strychnine, a substance known to be absorbed by the blood stream, killed such an animal in the same time as a normal one after subcutaneous injection into the front of the leg

TABLE I—RESULTS OF BLOOD AND SPLEEN CULTURES AFTER INJECTION OF *Ps pyocyaneus* INTO 6 NORMAL RABBITS AND 6 WITH LYMPHATICS OBSTRUCTED

—	Blood cultures		Spleen cultures	
	Infected	Sterile	Infected	Sterile
Normal rabbits	9	3	5	—
Rabbits with the lymphatics obstructed	1	11	1	5

Six rabbits were prepared in this way, and 0 3 c cm of a thick suspension of *Pseudomonas pyocyaneus* in saline was given in the following ways In one animal it was injected under the skin in front of the ankle, in another into the knee-joint, and into the remaining four it was placed in a deep freshly made wound in the muscles of the calf For each of these experimental animals, a control rabbit received the bacteria by the same route The limb was passively flexed and extended after the injection for about 30 sec and at 10 min and 1 hr after the injection 0 5 c cm of blood was taken from the ear vein and cultured on agar At the end of an hour the animals were killed, and the spleens removed and cultured The results of these cultures are given in table I In the one rabbit where the splenic and one of the blood-cultures were positive, it was suspected that a ligature had slipped , in one control animal the spleen was not cultured

From this it is clear that even from a recent wound into which has been poured an overwhelming number of bacteria none are taken up by the freshly injured blood-vessels , they appear in the circulation only when lymph drainage from the area is uninterrupted All bacteria do not travel with the same speed as *Ps pyocyaneus*, and pathogenic staphylococci injected into normal rabbits did not give rise to positive blood-cultures This, as suggested by Halban (1897) is probably because these organisms are held up on their way through the lymph-glands by the reaction they arouse among the cells there Although in these experiments *Ps pyocyaneus* appears to pass readily through several relays of lymph-glands Drinker, Field and Ward (1934) have shown that the lymph-gland of a dog will remove over 99% of a suspension of streptococci perfused through it

ABSORPTION OF CHEMICAL SUBSTANCES

The path of absorption of chemical substances apparently depends on the size of their molecules · the smaller molecules are absorbed by the blood-stream, the larger by the lymphatics (Drinker and Field 1933) Unfortunately we do not yet know where the dividing line is to be drawn—in other words what is the size of the molecule that is just able to enter a blood-capillary, while one slightly heavier must perforce travel by the lymphatics It is not simply a matter of the molecular weight as determined chemically, but rather a question of the state of the molecules as they exist in solution. Thus strychnine travels by the blood-stream (Magendie 1823), whereas a dye such as trypan blue, with a molecular weight only a little greater, travels by the lymphatics This dye however, is known to exist in solutions as a colloid made up of molecular aggregates of different sizes (Loeschke 1934) Starling (1895) showed that serum proteins were not removed from a limb by the blood-stream, and the work of Lewis (1921) and Field and Drinker (1931) provides the evidence that these proteins are absorbed from the tissues and are carried to the blood by the lymphatics The molecular weights of these substances range from 50,000 upwards

SNAKE VENOMS

We began our experiments with snake venoms because some of them kill animals with great rapidity , they may therefore be employed in acute experiments Most of the experiments were carried out with the venom of the black tiger snake, which is extremely toxic for rabbits , 5 mg in 0 1 c cm of saline given subcutaneously into the leg will kill a 2 kg. rabbit within 10 min. The toxic fraction of this venom is believed to be an enzyme, which will not dialyse through Cellophane, thus indicating that its molecular weight is over 20,000 (Chain and Goldsworthy 1938) The following experiments were carried out on rabbits operated on in various ways

In most animals 5 mg of dried venom in 0 1 c cm of saline was injected subcutaneously over the front of the tibia, and the leg alternately flexed and extended for 30 sec , the animals being anæsthetised with ether throughout Three control animals, weighing 1–2 kg., died with acute respiratory paralysis 5–8 min after injection of the venom Five animals were prepared in the way described for the experiments on bacterial absorption One of them died within 6 min , but one of the ligatures was found to have slipped , the other four appeared perfectly well after 30 min but died 10 min after the ligatures were divided In another rabbit the main lymphatics were cut in the groin, the skin being divided the whole way round the thigh between hæmostatic sutures in order to occlude the skin lymphatics , it survived for over an hour In another rabbit the mass ligatures were applied, and the

Notes, Comments and Abstracts

MENTAL WELFARE IN LIVERPOOL

THE experience of psychiatric clinics up and down the country appears to be identical: the air attacks on our large cities have failed to produce the crowd of hysterics expected; there has been no panic and little mental illness which can be attributed to the exertions of the enemy. The report of the Liverpool Psychiatric Clinic for 1940 states that the small number of cases affected by the bombing have been confined to civil defence and armament workers who have experienced long and extreme stress with lack of adequate sleep. In expectation of a strain on the resources of psychiatric clinics, 18 selected volunteers were trained as auxiliary mental health workers and warned for service; so far none of them has been required to serve in this capacity. The sociological results of evacuation billeting and shelter life have given much more cause for anxiety than bombing. There has been an absolute and relative increase in the number of people under 20 for whom the help of the clinic has been needed, and it is clear that the upheaval of social life and the insecurity are having an effect on young people; this tallies with the general experience of an increase in delinquency which seems inseparable from a state of war. The report shows that the first full year of war has not curtailed the activities of the clinic, though it now has no paid medical personnel and relies on the ungrudging services of the honorary staff.

A CENTURY OF PHARMACY

SPEAKING on April 13 at the commemorative meeting of the Pharmaceutical Society's centenary, Sir John Anderson, Lord President of the Council, pointed out that while in the medical profession there is not one main organisation, but many with different functions, for pharmacists the society contrive to combine the duties of the British Medical Association, the Royal Colleges, the General Medical Council and the Royal Society of Medicine in a single organisation. The founders laid down that the duty of the society was to advance chemistry and pharmacy; the society have pursued these aims with a constancy which deserves recognition. Sir John's remark that the society had had a romantic history was confirmed by the play, *Jacob Bell and Some Others*, which Mr. H. N. Linstead, the secretary, had written for the occasion. It was produced by Donald Wolfit and some 500 inheritors of the legacy of 1841 were as unanimous in their approval of it as were their forefathers in the craft when the resolution establishing the society was passed in the "Crown and Anchor."

Nobody will grudge the society the paper consumed by the centenary issue of its journal which runs to 134 attractive pages. War or no war, centenaries come but once in a hundred years, and the fat week was earned by lean weeks which justified a real gala number. The coloured cover depicts Bloomsbury Square as it was of old before the society chose it for its headquarters in 1841, and we look forward already to the next centenary cover which will no doubt show Brunswick Square of pre-blitz days.

A SHORT-WAVE SCREENING CUBICLE

IT has long been recognised that short-wave therapy apparatus radiates energy which causes a hum in any radio-receiving set that is tuned in to the same wave-length. As a war measure, and to prevent interference with Service radio communications, it is now compulsory to screen all high-frequency apparatus with an output of more than 10 watts. The engineering department of the G.P.O. has issued a pamphlet (C 1101) giving details of how to screen a room by coating the walls—including windows, floor and ceiling—with metallised paper or wire gauze. Doors must be specially treated so that the continuity of metal is unbroken and all exposed metal must be bonded to the screening material and earthed. It is also necessary to instal a wave trap or filter in the incoming power line to prevent interference being radiated back through the mains. These regulations govern the diathermy sets in use in most hospitals. To screen the whole room where the machine is used would be costly. Messrs. Philips have devised a cage which fulfils all requirements. It is sectional and can therefore be made to accommodate one or more pieces of apparatus and can be dismantled and moved as necessary. The cage is 6 ft. high and completely enclosed, the upper part of the walls with fine mesh, the lower with sheet metal. If the cage stands in a corner the sides next the walls are entirely metal. There is thus some privacy, but an operator working in the main part of the room can supervise treatment. The mains suppression filter and the earthing material are provided. It is a practical and relatively inexpensive device for solving a difficult problem.

IN SEARCH OF AN ETHIC

UNDER the title "After War—Peace?" (Watts and Co. 6*d*.) Mr. C. Delisle Burns, D.Lit., has collected a number of papers contributed to the *Monthly Record* of the South Place Ethical Society. He contends that moral authority, not power, is the chief motive force in every system of government, and that civilised men and women will support any public policy which seems to them morally right. Unfortunately, simple minds, confused by circumstances which they can neither understand nor control, adopt childish opinions about what is right. Thus, quite unwittingly, many people repeatedly act in a manner conducive to war. If real peace is ever to be established adequate moral standards which will make war impossible must be sought for, set up, understood and lived up to by everybody. Such standards, he thinks, should be based on an expanded concept of Christianity which in its present form is no longer wide enough to cover the complexities of modern life. Dr. Burns has some shrewd remarks to make on the merits and demerits of traditionalism. He is no pacifist, holding that it is necessary to fight in support of many things that are bad against something that is unquestionably worse. This pamphlet may contain not enough of concrete construction and too many abstract nouns to suit every taste, but it does something towards dispelling woolly and widely held notions of right and wrong and is a valuable antidote to excessive cynicism.

GLAXO laboratories are issuing an improved range of their preparations of procaine and procaine with adrenaline. Sevicaine, the new product, is suitable for minor surgery, and its activity is about equal to that of cocaine, but it has a wide margin of safety. It is available as a 1% solution of procaine hydrochloride in 10 c.cm. ampoules; 2% in 15 c.cm. rubber-capped bottles; and 2% with adrenaline (1 in 60,000) in 15 c.cm. ampoules and rubber-capped bottles.

ROCHE PRODUCTS LTD. have trebled the strength of their Benerva vitamin B_1 tablets. Benerva ampoules, formerly containing 2 mg. will be replaced by 5 mg. ampoules, and the Benerva Forte ampoules, formerly containing 10 mg. will now contain 25 mg.

A memorial tablet to Dr. Arthur Neville Cox, who died a year ago, has been unveiled at Brighton municipal chest clinic. Dr. Cox was tuberculosis officer for Brighton from 1913 to 1940, and spent much of his time in planning the clinic.

The Save the Children Fund has heard that Dr. Katherine Macphail, medical superintendent of the Anglo Jugoslavian Children's Hospital at Kamenica, is "safe and well in Rome."

Until further notice the holidays of elementary and maintained secondary schools in London will be 8 days at Whitsun, 15 days in the summer, 8 days at the autumn half term, 8 days at Christmas, 2 days at the spring half term, and 10 days at Easter.

The Chief Inspector of Factories should now be addressed at Queen Anne's Chambers, 28, Broadway, London, S.W.1.

Appointments

BROADBRIDGE, H. G., M.B. Lond., coroner for the western district of Middlesex.

BURN, J. L., M.D., B.Hy. Durh., D.P.H.: M.O.H. for Salford.

DEVENISH MEARES, MOLLY, M.B. Sydney, M.R.C.O.G.: R.M.O. at King Edward Memorial Hospital, Ealing.

HIRSCH, ERNST, M.D. Prague: outpatient and casualty M.O. at Kingston County Hospital.

LATTO, DOUGLAS, M.B. St. And.: R.S.O. at Hereford General Hospital.

MORTON, WILLIAM, M.D. Glasg.: M.O. in charge of medical service beds at Bromsgrove Public Assistance and Special Hospital.

STOKES, J. E., M.D. Dubl., D.P.H.: T.O. for Lewisham.

who believe that this toxin reaches the anterior-horn cells of the spinal cord by way of the axis cylinders (Topley and Wilson 1936) This theory, originally put forward by Meyer and Ransom (1903) to explain the occurrence of local tetanus after the injection of the toxin into a limb, has been contested by Abel in a series of papers (see Abel et al 1938) The need to explain local tetanus on these grounds seems no longer necessary since Harvey (1939) has so clearly shown that the toxin has a definite local action on the myoneural junction quite distinct from its effects on the central nervous system Ransom (1901) found that tetanus toxin injected subcutaneously into the leg of a dog appeared in the thoracic-duct lymph before it appeared in the blood If the duct was cannulated the amount of toxin in the blood-stream never rose to the levels found in control animals Table IV gives the results of injecting tetanus toxin into legs of rabbits immobilised in plaster spicas

TABLE IV—EFFECT OF IMMOBILISATION ON ABSORPTION OF TETANUS TOXIN

Pairs of rabbits of the same weight and colour were given equal doses of toxin subcutaneously into the leg One of the pair was left free, the other had the leg immobilised before the injection of toxin

Weight (kg)	Dose (c cm)	Control animals		Immobilised animals	
		Survived for	Mode of death	Survived for	Mode of death
2 5	0 1	5 days	Tetanus	14 days	Tetanus
2 0	0 08	4 ,,		9 ,,	,,
2 5	0 1	3 ,,		22 ,,	No sign of tetanus
1 2	0 08	4 ,	,	5 ,,	
1 9	0 1	2 ,		9 ,,	
1 8	0 07	3 ,		11 ,,	

Approximately 0 1 c cm of a solution of toxin (M L D for mice = 0 000061 c cm in 48 hours) was given to six pairs of rabbits, each pair being selected according to identity of colour and weight Only two of the animals with their legs immobilised died with signs of tetanus, 9 and 14 days after injection The remainder died with no signs of the disease, but probably because the plaster applied was too extensive—It was these animals that led us to investigate the effect of the size of the plaster on the life of the animal, our conclusions have already been discussed

We believe that this effect of immobilisation on the absorption of two of the snake venoms and the two bacterial toxins investigated can only be explained by assuming that they, like bacteria, travel by the lymphatics and not by the blood-stream We found that immobilisation of a limb in plaster had no effect whatever on the rate of absorption of strychnine, which is certainly carried by the blood-stream, for it is readily absorbed from a limb connected to the body only by the main artery and vein It is extremely difficult to prevent the absorption of compounds of low molecular weight, even with a complete ligature round a limb in an anæsthetised animal histamine will find its way into the general circulation, apparently by way of the blood-vessels of the bone-marrow (Blalock 1930)

LYMPHATIC CIRCULATION

In view of the importance of the lymph circulation in the absorption of substances from the tissues, we decided to investigate some of the factors governing its production and flow, we were particularly interested in the part played by muscular movements and inflammation A great deal of the recent work on this subject has been done by Drinker and Field and their colleagues, and a complete review of the earlier work appears in their book (Drinker and Field 1933) If a lymphatic in the leg of a dog is cannulated, no lymph will flow so long as the dog is at rest, but it appears as soon as the limb is moved and continues to flow as long as movement is maintained It is also known that the flow of lymph from a limb, the paw of which is inflamed, is greater than on the normal side (Lassar 1877, Field, Drinker and White 1932)

In our experiments dogs were used Under nembutal and ether anæsthesia one of the main lymphatic trunks lying alongside the femoral vessels in the thigh was cannulated and the remainder ligated In a normal limb at rest there was no detectable flow over a period of 30 min Passive movement of the limb produced an immediate flow that could be considerably increased if the muscles were stretched either by hyperextending or acutely flexing the limb manual compression of the muscles produced no flow at all The greatest quantity of lymph produced by a limb over a period of 30 min was brought about by active muscular contractions produced by faradic stimulation of the nerves, the limb being allowed to move through a full range of movement If the same stimulation was continued after the whole limb had been immobilised in a plaster spica the flow stopped almost completely (table V)

TABLE V—EFFECT OF COMPLETE IMMOBILISATION OF A LIMB ON FLOW OF LYMPH PRODUCED BY ACTIVE MUSCULAR CONTRACTIONS

—	Flow of lymph from groin in 30 min	
	Dog 7	Dog 8
With full movements (isotonic)	0 9 c cm	0 9 c cm
Immobilised in plaster (isometric)	0 2 ,,	0 1 ,

This shows that approximately isometric contractions of muscles produce only a very small flow of lymph, and therefore the increased flow during exercise is not accounted for by the increased metabolic activity of the muscles Drinker (1939) believes that movement may increase the production of lymph by submitting the blood-capillaries to frequent distortion and changes of tension and so facilitating the expression of fluid from them

LYMPH FLOW IN INFLAMMATION

The changes in the lymph flow brought about by the development of inflammation were studied on dogs whose feet were scalded by pouring hot water over them for a few minutes The flow of lymph produced by movement of the limb increased within 30 min of the injury, and this increase could again be reduced if the injured part was immobilised by a small plaster extending up to the ankle Table VI gives two examples of the figures we obtained The fact that local immobilisation was effective in restricting the flow from the burnt area was clearly brought out in dog 7

In this animal there were two cannulæ in different lymphatics in the same groin, and a small injection of pontamine blue had been made earlier into the tibialis anticus muscle, from one cannula came colourless lymph, and from the other lymph brightly stained by the dye With the burnt foot free movement produced a flow from both cannulæ, but the colourless lymph far exceeded the blue in quantity After the burnt foot had been immobilised the flow of colourless lymph almost ceased, and the lymph collected was almost entirely the blue lymph from the other cannula In other words, the lymph continued to flow from the unimmobilised muscles but not from the immobilised inflamed foot

TABLE VI—EFFECT OF IMMOBILISATION ON THE LYMPH FLOW FROM AN INFLAMED FOOT

—	Lymph flow from groin produced by active muscular contractions for 30 min	
	Dog 7	Dog 8
Before burning foot	0 9 c cm	0 9 c cm
After burning foot	2 2	2 2 ,
With burnt foot in plaster	0 5 ,	0 8 ,

The increase in lymph flow from a foot undergoing inflammatory changes was seen to coincide with the development of œdema This observation raises the important question of the lymph flow in œdema The lymphatics in an œdematous area, far from being occluded by the pressure of the swollen tissues, have been seen to be widely dilated in the inflamed ear of a mouse (Pullinger and Florey 1935) In man the skin lymphatics in cases of cardiac and renal œdema are dilated and in the latter case the flow is actually more rapid than normal (McMaster 1937) Our experience confirms these observations In animals with œdema following burns, main lymphatics divided in the abdomen, not in the groin , it lived for over 30 min In three more rabbits the abdomen was opened and a ligature placed round the vena cava, taking care to avoid damage to the main lymphatics lying alongside, and the epigastric vein was also tied , one died 8 min after the injection, and the other two survived for over 10 min The lymphatic trunks were seen to be dilated, and on massaging their contents towards the heart the animals died within a minute

From these experiments it can be seen that if the lymph flow from a limb is stopped by mechanical obstruction of the lymphatics tiger snake venom is not absorbed after subcutaneous injection , on the other hand, complete obstruction of the venous return will not prevent the death of the animal

We next tried the effect of reducing the lymph flow by physiological means, and for this purpose we made use of the fact that no lymph will flow from a limb that is completely immobilised In order to secure such conditions in an animal that was allowed to recover from an anæsthetic, we enclosed the whole leg and thigh in a plaster spica extending up over the lower abdomen, in this way obtaining not only fixation of the joints but also complete immobilisation of all the soft parts

In two rabbits the right leg was put in plaster with a window over the front of the tibia , each was given 5 mg of venom subcutaneously The first animal was perfectly well 105 min later , the plaster was then removed, and the animal died within 7 min The second animal remained in plaster for 210 min and died 60 min after its removal A further series of rabbits were then given a smaller dose of venom to see whether it were possible to save their lives by immobilising the injected limb in plaster The animals were given ether , a plaster spica was applied to the leg with a window over the tibia, and, after the plaster had set, 1 mg of venom in 0 1 c cm of saline was injected through the window The rabbits were then allowed to come round Table II summarises the results

TABLE II—EFFECT OF IMMOBILISATION ON ABSORPTION OF TIGER SNAKE VENOM FROM THE RABBIT'S LEG

—	No of rabbits	Colour	Weight (kg)	Duration of life
Control	1	Brown	1	150 min
	1	,,	0 6	60 ,,
	1	White	1	20 ,,
Immobilised in plaster	4	Brown	0 7	Survived
	1	,,	0 7	24 hr
	3	,,	1	8 ,, *
	2	White	1	24 ,,
	3	,,	1	8 ,, *

* These animals were alive 8 hr after the injection but were found dead next morning

It is clear that complete immobilisation of an area into which tiger snake venom is injected will considerably delay its absorption into the circulation Not only did the immobilised animals survive longer but their mode of death differed from that of the controls The latter died with acute respiratory paralysis and convulsions, while the former developed a flaccid paralysis starting in the limbs and only involving the respiratory centre last of all According to Lamb and Hunter (1904) these two types of poisoning are seen when large and small doses respectively of cobra venom are given to rabbits

We then attempted to repeat the experiments with Indian cobra venom Michel and Jung (1936) state that the molecular weight of this venom lies between 2500 and 4000, and we found that it readily dialysed through cellophane It does not act so quickly as the tiger snake venom, but 15 mg given subcutaneously to a rabbit killed it within 45 min With the subcutaneous injection of this venom into the leg, we found, however, that animals with lymphatics occluded or completely immobilised in plaster died in the same time as the controls When smaller doses were given into legs immobilised in plaster, the death of the animals was only delayed by a short time

This difference in the behaviour of the two venoms might be explained in one of two ways Either the molecule of the cobra venom is able to pass through the wall of a blood-capillary because of its smaller size, or the intense local reaction aroused by this venom, in contradistinction to the slight reactions that follow injections of tiger snake venom, so alters the permeability of the capillaries that they not only allow the serum proteins to pass out but also allow large molecules to pass in In an attempt to find the true explanation we were able to carrry out a small number of experiments with Russell viper venom This venom causes an even more intense local reaction than cobra venom, and one of the *Viperidæ* species has been found to have a venom with a molecular weight of at least 30,000 (Gralen and Svedberg 1938) A sample of the venom we used did not pass through cellophane , in other words, its molecular weight was over 20,000 We used kittens for this experiment, and found that two doses of 10 mg of venom given at an hour's interval killed the two control animals within 48 hours Two animals of the same weight had the venom injected into the foot of a limb immobilised in a plaster spica , they were perfectly well after 48 hours, and were killed on the fourth day, never having shown any signs of poisoning It is very difficult to immobilise completely these active muscular animals, hence the need to put the injection as low as possible in the limb

From these results it would appear that a molecule as large as that of cobra venom, believed to be in the neighbourhood of 3000, will be absorbed by the blood-stream

BACTERIAL TOXINS

The fact that the absorption of snake venoms could be delayed by the immobilisation of a limb in plaster afforded a means of studying bacterial toxins in the same way, though their effects may take several days to appear Rabbits may be kept alive for a few weeks with one limb in a plaster spica, but they gradually lose weight in spite of maintaining a normal appetite We did find, however, that a few animals died after 2–5 days in plaster for no reason connected with any injection given We think that, if the body part of the spica extends so high that the animal cannot twist its body round in order to bring its head into the normal position in relationship to the ground, the rabbit rapidly sickens, ceases to eat and dies

We first carried out a series of experiments with diphtheria toxin Little is known about the molecular weights of bacterial toxins, though they have been stated to resemble serum proteins in their constitution (Buchanan and Fulmer 1928) Efforts at purification have proceeded furthest with diphtheria toxin , in the latest paper of Pappenheimer its molecular weight is given as 70,000 (Pappenheimer et al 1940) The sample we employed did not dialyse through cellophane

Animals dying of experimental diphtheria intoxication show extensive necrotic changes in the lymph-glands, especially those draining the site of injection of the bacteria (Welch and Flexner, 1891) This suggests that the toxin may travel through the lymphatics Table III shows the effects of immobilisation on the time of survival of rabbits after they had received a large dose of diphtheria toxin subcutaneously The animals were given approximately 0 1 c cm of a 1 1000 dilution of a purified toxin (M L D for a guineapig 0 000025 c cm) , five rabbits had the injection given through a window in a plaster spica, and the other four remained free

TABLE III—EFFECT OF IMMOBILISATION ON DURATION OF SURVIVAL OF RABBITS AFTER AN INJECTION OF DIPHTHERIA TOXIN

—	No of rabbits	Weight (kg)	Dose (c cm)	Duration of life
Control	2	2 7	0 1	40 hr
	1	3 0	0 12	36 ,,
	1	1 2	0 1	28 ,, *
Immobilised in plaster	1	2 7	0 1	Survived
	1	2 7	0 1	28 hr
	1	2 6	0 1	84 ,,
	1	2 3	0 08	84 ,,
	1	2 1	0 08	128 ,,

* Received a double dose

These results suggest that the absorption of diphtheria toxin may be delayed if the limb is immobilised , the effects might have been more manifest had less overwhelming doses been given

A similar series of experiments were then carried out with tetanus toxin At the present time there are many

TUBERCULOUS OBSTRUCTIVE EMPHYSEMA IN CHILDREN

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Tuberculous obstructive emphysema may be a feature of primary tuberculosis in children in cases where there is emphysema of the lung due to a bronchial narrowing, such narrowing being associated with the lymph-glandular enlargement which is characteristic of the response to a primary tuberculous infection The bronchial stenosis produced may be partial or valvular, allowing air to enter the lung at a greater rate than it can leave it It is my purpose to review the literature and record 3 further cases

I have classified the condition into 3 stages stage 1, obstruction of minor degree with no mediastinal displacement, stage 2, obstruction with slight mediastinal displacement, stage 3, obstruction with gross mediastinal displacement sufficient to cause signs in the contralateral lung of passive collapse The first of my 3 cases shows strikingly the transition from stage 1 to stage 2 The second and third cases are representative of stage 3

Accounts of the condition have seldom been published, indeed, I have only been able to find 16 cases Others have been reported, but the criteria of tuberculosis were not well defined If the tuberculin test was negative I have discarded the case for the purposes of this paper, unless there was positive evidence obtained by direct biopsy In one of Spivek's[1] cases, however, these two criteria were not present but there was sufficient evidence in the form of hilar glands and a positive family history to justify inclusion (case 8, see table) It is possible that the condition is not as rare as it seems Cases are missed owing to the difficulties of an accurate physical examination of the chest in small children and the confusion of the condition with asthma, foreign bodies, bronchitis, collapsed lung and other chest conditions Saner[2] has described a typical stage-1 case in Abt's book on pædiatrics, but it was not recognised as such

INCIDENCE AND CLINICAL PICTURE

Fig 1 shows that the greatest incidence of the disease occurs between the ages of 6 months and 1 year, after which there is a gradual fall between the ages of 2 and 5 At the age of 7 the condition becomes rare A human infection, probably from the mother or immediate family, would account for this Of the 16 cases reported by other observers and my own cases the type of infant feeding was only mentioned in 8 All of these were breast-fed except 3, and 2 of them had a strong family history of tuberculosis Of the breast-fed cases there was a positive family history in 4

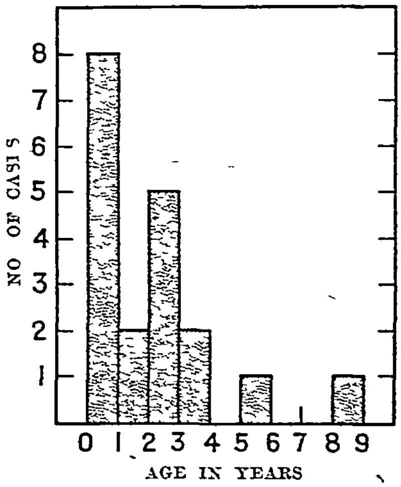

Fig 1—Age incidence

In 4 of the cases where feeding was not mentioned there was a positive contact or family history

The incidence in the sexes is equal Out of 19 cases (including mine) the right lung was affected in 13, and the left in 6 In only 4 cases was the onset sudden[3,8] In the remainder there was a dry cough occurring soon after birth,[4] or from 2 to 6 months before the first

CASES REPORTED BY OTHER OBSERVERS

Case	Author	Age	Feeding	Family history	Stage	Side	Tb test	Other Tb	Onset and symptoms	Bronchoscopy
1	Orel	5 8/12		? Aunt	2	L		Infiltration lt base	4/12 dry cough	Yellow mass Tb granulation tissue
2	Huizinga	2			1	R	Pirquet –		Cough dyspnœa 10/52	Caseous Tb granulation tissue
3		8			1	R	Pirquet +		Cough 1/12 following f b Stridor on exertion	Caseous Tb granulation tissue lateral wall
4	Stone	2	Breast 4/12	Neg	1	R	Pirquet +		Gastro enteritis cough wheezy worse at night gradual onset	Tb granulation tissue lateral wall
5	Kohn	9/52	Breast	? Nurse	3	R	Pirquet +		Cough dyspnœa, 3/52 Feeding difficulties	Stenosis extrabronchial pressure
6	Spivek	10/12		No exposure	2	L	Mantoux +		Cyanosis on crying rapid breathing 5/12, cough	Extrabronchial pressure
7		3 6/12		Father Tb	2	R	Pirquet +	Hilar gland Neck gland breaking down	Sudden onset cough sputum and dyspnœa Emphysema chest wall	Normal 6/12 after onset
8		3 3/12		Sister and uncle died Tb	2	R		Hilar gland previously	Cough 6/12	
9		7/12		No exposure	2	L	Pirquet +		Cough whistling breathing 14/52	Extrabronchial pressure
10	Faust	9/12	Pasteurised milk		2	L	Mantoux +		Cough 6/12 Wheeze 3/12*	Tb granulation tissue inner wall
11	Peshkin & Fineman	2	Breast	Negative	2	L	Pirquet +	Cervical adenitis Infiltration lt lower lobe	6/12 cough following measles † Asthmatic dyspnœa	
12		4/12	Breast	Mother has cough	2	R	Pirquet +++	Hilar glands infiltration rt base	Cough and wheeze 1/12 †‡	
13		6/12	Bottle	Mother Tb	2	R	Pirquet +	Tuberculides skin Infiltration rt lung	Cough wheeze 2/12	
14	Fliasberg	9/12			2	R	Mantoux +	Foci lt lower lobe	Cough expiratory stridor long time	Pm extrabronchial pressure
15		1 9/12			2	R	Moroschen + stomach w o +		Rattling bronchitis	Extrabronchial pressure
16	Myerson	3/12			1	R	TB from gland p m	Infiltration rt upper lobe	Croupy cough dyspnœa cyanosis 16 days	Extrabronchial pressure Died during bronchoscopy

* Positive asthma tests to wool rabbit dog oats and orris † Negative asthma tests ‡ Allergic eczema

and in two animals with a generalised œdema of one leg, one of them associated with an abscess in the thigh, there was always a greatly increased lymph flow on movement The fact that the vessels are dilated was well illustrated in an animal with generalised œdema of one leg, pressure on the œdematous foot immediately produced a copious flow of lymph from a cannula in the groin In the same way, dyes and bacteria travelled with greater speed in the œdematous limbs when they were moved Thus pontamine blue and a suspension of *Ps pyocyaneus* injected under the skin in front of the ankle were both detected in the lymph from the groin in under a minute in the œdematous leg, whereas they did not appear for 3 min in a normal animal

We decided to observe the effect of preventing the appearance of œdema after scalding the foot by enclosing it immediately in a small plaster Table VII shows the results in one animal

TABLE VII—EFFECT OF PREVENTION OF ŒDEMA ON FLOW OF LYMPH FROM A SCALDED FOOT IN DOGS

Both feet were scalded simultaneously, the right was then enclosed in plaster and the left remained free

—	Lymph flow in 15 min after passive movements of leg	
	Right	Left
Before scalding	0 6 c cm	0 6 c cm
30 min after scalding	0 6 c cm	1 2 c cm
60 ,, ,, ,,	0 75 c cm	2 2 c cm

On removal of the plaster 3 hrs after the scalding, the right foot measured 1 25 cm less in circumference than the other Pressure on the paw produced only 0 05 c cm of lymph from the cannula in 30 sec, compared with 0 3 c cm in the other foot Although enclosure of a recently scalded foot will prevent its swelling, and so reduce the lymph flow to a large extent in comparison with a foot left free to swell, there is still a considerable flow from such a limb An attempt was therefore made to see if this could be reduced still further by providing local drainage for any excess of fluid poured out from the lymph vessels that were under the plaster Accordingly, in another animal, both feet were burnt simultaneously, in one foot several longitudinal incisions were immediately made into the *dorsum of the foot* Both feet were then enclosed in plaster up to the ankle, and the quantity of lymph produced by passive movements measured (table VIII)

TABLE VIII—EFFECT OF PROVIDING LOCAL DRAINAGE ON FLOW OF LYMPH FROM A DOG'S FOOT ENCLOSED IN PLASTER AFTER BEING SCALDED

Both feet were scalded simultaneously, the right was then enclosed in plaster and the left was incised and enclosed in plaster

—	Lymph flow in 30 min after passive movements of leg	
	Right	Left
Before scalding	1 1 c cm	1 3 c cm
30 min after scalding	1 2 c cm	0 4 c cm

Thus it is seen that if local drainage is created before an inflamed foot is placed in plaster the flow of lymph from that limb is considerably smaller than that from the other side enclosed in plaster without any drainage

SUMMARY AND CONCLUSIONS

Bacteria, like inert particles, travel from the tissues to the blood only by the lymph-stream We found that they did so even from freshly inflicted wounds when there might be some chance of their entering the recently divided blood-vessels

Black tiger snake venom, with a molecular weight of over 20,000, is not absorbed from a limb whose lymphatics are obstructed, or from one that is completely immobilised Similarly, Russell viper venom, and diphtheria and tetanus toxins, all with molecular weights exceeding 20,000, are much less readily absorbed from limbs that have been immobilised Since it is known that no lymph will flow from an immobilised leg the effect of immobilisation on the absorption of these venoms and toxins must be explained by the assumption that they are carried from the tissues to the blood-stream only by the lymph

Cobra venom (molecular weight under 5000), like strychnine, is absorbed with equal rapidity from a normal limb and from one whose lymphatics are obstructed or from one that is immobilised These substances must enter the blood-stream immediately, presumably by virtue of their possessing smaller molecules The study of the absorption of substances from immobilised areas may afford a means of finding out the exact route they follow

We have confirmed the fact that in œdema the production and flow of lymph are greatly increased, and that if *inflammatory* œdema is prevented from developing the lymph flow may be substantially reduced A method by which œdema may be prevented, and at the same time complete immobilisation secured, is the enclosure of the injured part in a closed plaster cast The reduction of the lymph flow obtained by this means is further enhanced if local drainage of the inflamed part is provided by incision

The effect of immobilisation on the absorption of tetanus toxin suggests that this substance is carried to the blood by the lymphatics, and, if the recent experimental proof of the local action of this toxin is taken into account, we think that the old theory that a toxin can travel up nerve trunks should be discarded

It is hoped to discuss in a later paper the significance of some of these findings in relation to the surgical treatment of infected wounds

We would like to thank Dr H J Parish for his help with the work on the bacterial toxins, the Welcome Research Laboratories for supplies of diphtheria and tetanus toxins and Russell viper venom, Professor Gunn and Dr E Chain for supplies of cobra and black tiger snake venom respectively, and Prof H W Florey and Prof H J Seddon for their help and criticism in the course of this work and the preparation of the paper

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SELIX, an adhesive for use in securing dressings, has been issued by British Drug Houses in collapsible tubes with elongated nozzles It is especially useful for dressings in awkward places such as in the flexures, and it is effective on wet and dry surfaces but not on greasy surfaces It can easily be removed by rubbing the skin with a finger

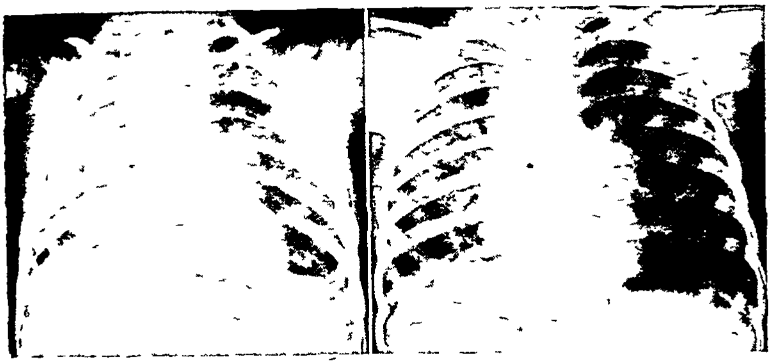

FIG 2—Radiograms in case 1 on admission (A) and 67 days later (B)

adventitious sounds Small mesenteric glands said to be palpable in abdomen

Lederle patch test for tuberculosis strongly positive Sedimentation rate 6 mm in 1 hour Stomach washout for tubercle bacilli, negative *Fæcal fats, normal*

Radiogram (fig 2A) shows condition when child was first seen Large gland at left hilum, mediastinum not displaced and left lung field more translucent than right Diaphragm somewhat depressed on left side Obstructive emphysema, stage 1, can be diagnosed Radiogram (fig 2B), taken 67 days later, shows condition more advanced, mediastinum having been displaced The condition had progressed to stage 2 Bronchoscopy was performed by Mr James Crooks Right bronchus normal Left main bronchus almost completely obstructed from pressure both laterally and above, probably caused by a gland which had caused ulceration of bronchial mucosa, and white caseous material kept exuding through Biopsy not made

After the bronchoscopy there was evidence of collapse of left base where there was no air entry, mediastinum still displaced to right Caseous material may have blocked entrance to left lower lobe After a week collapsed area had expanded again and remaining part of lung had become less emphysematous, so that mediastinum had returned to normal position A fortnight after bronchoscopy percussion note still slightly hyper resonant and air entry still weaker on left side No mediastinal displacement Child looked well and was putting on weight under sanatorium conditions

CASE 2—Boy aged 2 yr 10 months who lived in London Home circumstances poor No previous illnesses No family history of tuberculosis but one sister was "chesty" and father had cough Child had been continuously wheezy for 2 months Onset gradual and accompanied by cough Not a mouth breather. Was subject to wheezy exacerbations worse at night but unaffected by exertion No sweats and sputum absent Appetite fair and a lively child At home slept with feather pillows, horsehair mattress and feather eiderdown Pale, well covered, somewhat fat and flabby and covered with urticarial spots Respiration 24 Afebrile Tonsils large and moderate enlargement of cervical glands Wheeze audible at foot of bed, accentuated by extending child's head on his neck when his mouth was open Chest appeared distended and respiratory movements poor on both sides Trachea displaced to left and apex beat palpable in anterior axillary line Percussion note hyper resonant on right side, at left base dull anteriorly and posteriorly as high as fourth rib, band of hyper resonance 1½ in wide parallel to and adjacent to spine extending down to base posteriorly on left side On right side inspiration short and squeaky Expiration inaudible. On left side, over dull area, breath sounds loud and bronchial, over hyper resonant area similar to those on right side

Tuberculin patch test positive Sedimentation rate, 7 mm in 1 hour

Radiogram (fig 3) shows widening of rib spaces with depression of right side of diaphragm and diminished density of lung field Heart displaced to left Lung field on left obscured by mottling, this suggested obstructive emphysema of right lung and some passive collapse of left lung—that is, stage 3

Bronchoscopy was performed by Prof R S Pilcher Aditus normal, carina widened Left bronchus normal Right bronchus blocked by mass of granulation tissue Lumen opened during inspiration and was obstructed during expiration; bubbles forming over the chink Granulations were removed with punch forceps and proved to be typical tuberculous granulation tissue microscopically No foreign body seen but a clear view was not obtained after removal of granulation tissue

Child had a temporary stridor after operation but radiogram showed heart had returned to its normal position and both lung fields were clear and equally aerated Wheezing ceased in 2 days, 7 days later radiogram showed some collapse of right base Child was not disturbed in any way and affected lung expanded again Sent to Harefield Sanatorium and a year later had no cough or wheezing, had gained 2 lb and had a calcifying lesion in right upper zone

CASE 3—Girl aged 14 months Only child and lived in country One uncle and one aunt died of active tuberculosis and one of them had been in short contact with the child Both grandfathers asthmatic Six months before admission had had high temperature with cough, wheezy breathing and loss of voice, was ill for 3 weeks Breathing had since been heavy No history of cyanotic attacks or attacks of asthma Cry normal and did not make wheezing worse General health good until 6 months before admission Weighed 18 lb at age of 9 months, since when had only gained 1 lb Appetite poor and had a slight dry cough Well-nourished child who became cyanosed on crying and had distressed breathing which gave appearance of typical asthmatic attack Chest movements poor on both sides, some scoliosis with concavity to left Right side of chest fuller than left Trachea appeared displaced to left Apex-beat difficult to locate but probably in axillary line Percussion note hyper-resonant on right side On left side band of hyper resonance parallel to and adjacent to spine near base of lung posteriorly Percussion note over remainder of lung on left side grossly impaired Breath sounds clear and bronchial over area with impaired percussion note On right side breath sounds weak, inspiration audible but expiration very short and almost absent, similar breath sounds heard on left side over hyper-resonant area Liver palpable 1 in below costal margin, evidence being in favour of downward displacement of liver rather than enlargement Tonsils and tonsillar glands enlarged

Skin reactions control negative, group-1 pollens positive pollens 20% positive Tuberculin patch test positive Sedimentation rate 9 mm in 1 hour

Radiogram (fig 3B) showed heart displaced into axilla on left side and part of right lung on left side of spine Right lung field has decreased density On right side rib spaces are wide and diaphragm depressed Scoliosis with concavity to left Left lung greatly shrunken Appearances are those of obstructive emphysema of right lung with extreme passive collapse of left lung This represents stage 3, well advanced

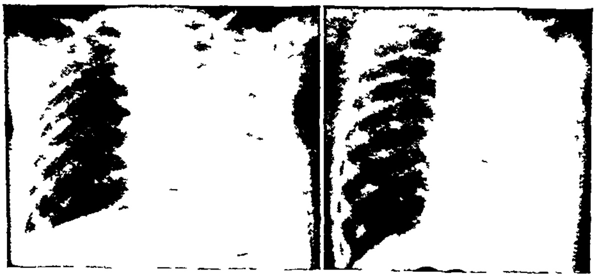

FIG 3—Radiograms in case 2 (A) and case 3 (B)

Bronchoscopy performed by Mr Crooks Gland found obstructing right main bronchus which was reduced to a chink. This presumably was acting as a valve, allowing air to enter right lung but not to return Left main bronchus appeared normal.

After bronchoscopy, although gland was not removed, mediastinum returned to normal position in 3 days Child rapidly improved and was sent home to country Father gave following report 1½ years later "For 4 months after consultation In stages 2 and 3 there may be a wheeze which is usually expiratory, but may be both inspiratory and expiratory It may, in some cases, be accentuated by opening the child's mouth and tilting the head backwards This may be helpful in diagnosis The wheeze is usually constant and progressive, worse on crying, exertion and in cold weather In 2 cases there were exacerbations at night, no doubt due to posture The noise emitted is described as rattling or sometimes as a stridor 2 cases were actually treated as asthma with antispasmodics [5,6] In 4 cases the condition started as a gastro-enteritis or feeding difficulty [4,6,7] In 2 cases there were allergic manifestations apart from " asthma " such as dry eczema [5] and urticarial spots, tending to confuse the diagnosis In one case there were tuberculous glands in the neck [1] and in another there were tuberculides in the skin [5] A history of a previous febrile illness was present in 7 cases This was either present on admission or had occurred from 1 week to 6 months beforehand Only 2 cases gave a history of measles which might have caused enlargement of the mediastinal glands [5,9] In all the stages the children appear healthy, as commonly happens in glandular tuberculosis The appetite is usually good The wheeze is present in stages 2 and 3 but not 1 , dyspnœa, however, may be present in all the stages

Stage 1 —There are usually dry cough (but no wheeze), dyspnœa or cyanosis There is no alteration in the appearance of the chest The percussion note may be slightly more resonant on the affected side and the breath sounds are weak Radiography may show nothing if the exposure has been made during full inspiration In Huizinga's case,[3] for instance, the affected lung lit up more brightly on expiration and the mediastinum moved away from the affected lung, while the diaphragm on that side did not move up On inspiration the mediastinum moved back to the midline and both lung fields appeared alike Alternatively, a radiogram may show that the mediastinum is central and that the affected lung is brighter than that of the opposite side Unless, therefore, a radiogram is taken in full expiration or the patient is screened the condition will be missed

Stage 2 —The symptoms are similar to those of stage 1, but there may be, in addition, a wheeze or dyspnœa on exertion or crying Respiratory movements are extremely poor on the affected side, which is held in a position of full inspiration , this produces a mild postural scoliosis with the concavity away from the affected side and widening of the rib spaces There may be impaired vocal resonance and fremitus The percussion note varies from flatness to hyperresonance according to the tension of the air in the lung Breath sounds may be absent or diminished, but if inspiration is heard expiration is likely to be extremely short and squeaky, or may be absent Rhonchi and râles may be heard in both lungs The heart is displaced away from the affected side Radiography shows scoliosis to the unaffected side The rib spaces are wide on the affected side and the diaphragm is depressed The heart is displaced away from the affected side and the lung field on that side is more translucent

Stage 3 —Further progression of the condition pushes the mediastinum across so far that passive collapse of the lung on the opposite side may be caused These cases are often misdiagnosed as collapsed lung, the emphysema being missed The symptoms, as well as the physical signs on the affected side, are similar to those of stage 2 , The heart is displaced by pressure away from the affected lung On the " good " side a band of hyper resonance and diminished breath sounds is found parallel and adjacent to the spine, caused by encroachment of the emphysematous lung on the opposite side Lateral to this band and extending to the axilla is an area of dullness with increased vocal resonance and bronchial breath sounds due to peribronchial collapse The radiogram is similar to that of stage 2, with the addition of increased density in the other lung

DIAGNOSIS

In my 3 personal cases the sedimentation-rates were within normal limits The tuberculin patch test is simple to apply and where it was negative the Mantoux test was done Stomach washings may be of some assistance in confirming the diagnosis if tubercle bacilli are found In 2 of the reported cases the leucocyte count was normal

The stenosis in 7 cases was seen, by bronchoscopy, to be due to a yellowish mass protruding into the bronchial wall [1,4,8,10] The mucosa in these cases was intact In 7 other cases tuberculous granulation tissue was the cause of obstruction [3,6,7,9] During bronchoscopy the affected bronchus can be seen to be reduced to a chink, and the lumen that remains is seen to open during inspiration and shut during expiration

The liver may be abnormally palpable Some people think that this is due to enlargement, but pressure from above is probably responsible There may be associated manifestations of tuberculosis, such as glands and lesions of the skin

Asthma produces the commonest confusion in diagnosis In 2 of the 19 cases allergic manifestations (eczema and urticaria) were present Some of the children with wheeziness were subjected to skin tests and found to be positive to certain protein groups Skin tests are therefore of little help in differential diagnosis The wheeze in obstructive emphysema may simulate asthma in being worse at night and in cold weather It is, however, more constant and is accentuated with the mouth open and the neck extended, and during increased respiration, for instance, when the child is crying The wheeze is progressive rather than paroxysmal The tuberculin test affords the greatest help out of 16 tested cases it was positive in 15, all being under 4 years of age except one It is also important to note that where the sedimentation-rate was done it was normal, so that little reliance can be placed on this test as an aid to diagnosis

Stage-1 cases are most likely to be confused with bronchitis because there are often added rhonchi , and unless the child is screened there is no evidence of obstructive emphysema, and a straight radiogram will be reported on as a normal chest Screening, a tuberculin test, and if necessary bronchoscopy, will help here in diagnosis Stage 3 may simulate collapse of the lung because there is mediastinal displacement , the emphysema could be compensatory to the collapse , and there may be signs of peribronchial collapse in the good lung The diagnosis is settled by weak or absent expiration on the emphysematous side, relative immobility of the chest wall and diaphragm on the emphysematous side, and the radiographic and bronchoscopic appearances

Though the onset of obstructive emphysema is sudden in some cases, it is not so sudden as that of spontaneous pneumothorax Dyspnœa and cyanosis are often seen in both conditions and also in the presence of lung cysts, but in pneumothorax and lung cysts a wheeze may be absent The heart may be displaced and the affected side hyper-resonant in these conditions However, if breath-sounds are heard in pneumothorax and cysts expiration will be audible If there is doubt radiography should settle the diagnosis, but if it fails to do so pleural-pressure readings will help to decide between spontaneous pneumothorax and obstructive emphysema There are objections, however, to taking pleural-pressure readings if an air-containing cyst is suspected, because puncture of the cyst wall may convert the case to one of valvular pneumothorax

Foreign body in the bronchus may present considerable difficulty in diagnosis, especially as foreign bodies may produce obstructive emphysema This is therefore a sound argument for bronchoscoping all small children with obstructive emphysema A great deal of help is obtained in these cases if the tuberculin test is positive, though this does not exclude a foreign body nor the necessity for bronchoscopy

CASE-REPORTS

CASE 1 —Girl aged 2 years Full term child Breast fed for 3 months Strong family history of tuberculosis One aunt and a cousin were contacts Difficult to rear on account of vomiting, diarrhœa, and colicky pain from the age of 7 months Stools had been offensive and putty coloured and this, with her history, suggested cœliac disease Blood had been present in stool on two occasions Had been some cough for 7 months but no wheezing , 10 months prior to admission had had a febrile illness lasting 24 hours, accompanied by cough and some loss of appetite and weight A pale well covered child, small for her age, with large sunken eyes Trachea displaced to right Percussion note hyper resonant on left side of chest with diminished air entry No syndrome" and other nervous features of the case I hope to make a further communication.)

Had sulphapyridine or one of the other sulphonamides been used in this case the "recovery" would have been attributed to it. The accounts of Friedman, Hamburger and Katz (1939), Witts (1940), Fletcher (1940 and 1941), Dockeray and Kaweran (1940) and Sevitt (1941) make one doubt whether treatment by heparin and a sulphonamide—introduced by Kelson and White (1939)—can ever be successful. Had heparin been used in the present case the patient would almost certainly have died from cerebral hæmorrhage. The evidence given by Capps (1939) shows that spontaneous recovery from subacute bacterial endocarditis though extremely rare does occasionally occur. The present case confirms this and one is not justified in saying that the disease without special treatment is certainly fatal. Nor is one justified in saying that one had better give heparin and risk almost certain death from cerebral hæmorrhage.

Of course, I cannot be certain that one of the sulphonamides had not been given before I first saw this patient in November, 1939 but even if it had been given it had failed to suppress the infection, which remained active at least till April 1940. In a similar case I should nevertheless make a serious trial of sulphapyridine. In fact this drug in combination with heparin was to have been given, but owing to adverse reports on heparin the whole idea was given up and no chemotherapy was attempted.

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EPILEPTICS IN AIR-RAIDS

By J. Tylor Fox, M.D. Camb., D.P.M.
MEDICAL SUPERINTENDENT OF LINGFIELD EPILEPTIC COLONY

The full-blooded psychogenic theory of epilepsy supposes that the fits are no more than psychological reactions to environment in people endowed with a certain type of abnormal mental make-up. Conflict and emotional stress underlie the first fit that the patient experiences, and subsequent attacks are always due to the revival of the original unpleasant emotion, by memory associations or exogenous stimuli. Obviously in this case fits are more likely to arise when the surrounding circumstances of the patient are more difficult than usual.

Few would now accept this theory as applicable to more than a very limited number of cases but it is fairly common to find the start of epilepsy attributed to some unpleasant emotion such as anxiety, worry or acute mental shock. After the last war the fits in a large number of children coming under my care were put down to the strain of air-raids which had occurred before the patient's birth or at varying ages in early childhood, and the same cause is now beginning to be applied in epilepsies that have made their first appearance in the last few months. The intervals between the emotional stress and the appearance of fits are however, so variable that the alleged connexion is in my view mostly of importance in fulfilling the desire of the parents to find a cause for their child's affliction.

Environmental factors undoubtedly play some part in determining the occurrence of fits in established epilepsy. A complete change of environment often has a pronounced if temporary effect most often of a beneficial kind as witness the common cessation of attacks when a patient is taken into hospital for observation. Excitement is said to cause fits. I have seen a very few cases where this is true, but as a generalisation it is false as anyone can testify who has sat through a Wild West film in company with 400 epileptics. That boredom anxiety and worry do predispose to fits in certain cases I am satisfied but the relative unimportance of environmental factors is suggested by the absence of weekly fit rhythms. In a rather exhaustive search through a large number of fit records all kinds of long distance rhythms were found—monthly bi-monthly quarterly and even fortnightly but not one weekly rhythm. As a seven-day rhythm is perhaps more obvious in institutions than in the community generally one would have expected if environment was of importance to find some patients the occurrence of whose fits was determined by some factor in the weekly routine.

During the last few months there have been opportunities to observe the effect of unpleasant emotion on a group of about 250 epileptic children and 200 adults. The group comprises people of normal or retarded intelligence, but not of low-grade mental defect. There were days last summer of considerable air activity with fighting directly overhead and planes brought down in the immediate neighbourhood; there have been several nights when bombs have exploded within a short distance of our homes. These events have meant sirens a hasty exit from school or workshop or an unwelcome routing out of bed; on occasion a rush to a rather overcrowded protected room. The scene was well laid for observation of the effects of unpleasant emotion upon epileptics—and nothing happened. There was no general increase of attacks on days or nights of air activity nor has any evidence been found of increased fits in individuals. At least 95% of our patients have to all appearances been unperturbed, and the resultant mental upset in the remainder has not been striking. Are they heroes or stoics? Probably the latter. It may be suggested that many of them have increased resistance to painful mental impressions as they undoubtedly have to painful physical impression a resistance that is no doubt aided by defective imagination but this is not altogether consistent with the hypersensitiveness which is claimed as a cardinal feature of the epileptic temperament. A further factor may be found in medication. Most of our patients are having anticonvulsant drugs in moderate doses, rarely exceeding bromide gr 30, or phenobarbital, gr 2, in the 24 hours and these have no doubt helped to discourage extra fits or mental upset. It need scarcely be said perhaps that the staff have had impressed on them the importance of appearing unconcerned in the face of danger, for our patients with their immature outlook on life, will be more prone than other people to take their cue from those in authority. Moreover it must be said that although the noises, alarums and excursions without seemed sometimes to be very close at hand, so far we have not experienced (apart from a few broken windows and damaged tiles) any actual damage to person or property. Perhaps events so far have kept outside the circumference of the epileptic's well-known egocentricity. Bring them a little nearer home and the results may be different.

So far as it goes however our experience has shown that acute emotional stress is without effect on the incidence of fits in people suffering from epilepsy and gives rise to surprisingly little mental upset. This conclusion is confirmed by a social worker who spends her time overseeing and advising epileptics living in the London area. She tells me that many of her cases have had intimate and even repeated experience of bomb explosions, but that so far she has not found one whose attacks have been increased. One must not of course, confuse the causes of epilepsy with the precipitating causes of fits in patients who are already epileptic, but I suggest that our experience fits into the picture of an illness of physical rather than mental origin and confirms the view that a sharp line can be drawn between epilepsy and the psychoneuroses.

SUMMARY

Air-raids and air-raid alarms have afforded an opportunity to observe the effect of unpleasant emotional stress on a large group of epileptics. Contrary to expectation there has been no increase of fits and in very few cases has there been evidence of mental upset. It is suggested that these observations have significance both in the ætiology and the treatment of the disease.

leaving hospital she wheezed occasionally, but became progressively better under sanatorium conditions She was in bed for 6 months She now has no cough and appears to be cured ”

PROGNOSIS AND TREATMENT

The prognosis depends on the underlying condition Resolution may occur, the obstructive emphysema may remain as such and neither progress nor resolve, or the condition of stenosis may increase sufficiently to produce collapse of the lung and bronchiectasis A true prognosis, based on this series, cannot be made owing to the diverse nature of the treatments employed by different observers While it is known that death may occur from expulsion of a caseous gland into a bronchus, the symptoms of a wheeze may have acted as a warning sign, for there was tuberculous granulation tissue in the bronchus of 7 of the children and none of them died In 6, the obstruction was due to an unulcerated gland, 4 of these died but 2 of them had had X-ray therapy and on this account it is difficult to assess the results It seems therefore that ulceration into the bronchus does not necessarily carry with it a bad prognosis

The obstructive emphysema seems to be relieved more rapidly and with greater certainty if bronchoscopy is performed *If granulation tissue is present the removal* of a portion will re-establish an airway If an unulcerated gland is present bronchoscopy seems to give permanent relief, as in case 3 This cannot be due entirely to the removal of a plug of mucus, since improvement would probably not be maintained The benefit may be due to the dilatation by the bronchoscope overcoming the bronchial spasm Hudson has recently described the beneficial effect of passing a bronchoscope on patients with asthma [11] In all, 13 cases were bronchoscoped, 1 died during bronchoscopy,[8] 8 were apparently well at times varying from 1 month to 8 years after the onset of the disease One of these children contracted measles 2 years later but was well when seen the following year [6]; 3 of the bronchoscoped children received X-ray therapy [1] [4] The immediate results of bronchoscopy in them were good but one relapsed 3 days after X-ray therapy, the child finally recovered and was well 5 years later [4] In 1 an increase in dyspnœa and bronchogenic spread followed X-ray therapy, the third died from tuberculous meningitis following the second dose of X-ray [1] These results are no recommendation for X-ray therapy In 2 of our cases tuberculous tissue was removed from the bronchus, and this measure was followed two or three days later by a collapse of the lobe The affected tissue, however, gradually re-expanded Sanatorium treatment improves the general condition, and the children respond to it by an increase in weight and decrease in the cough

DISCUSSION

The low age-incidence may be accounted for in the following ways first, the small lumen of the bronchi is easily occluded by the swollen infected hilar glands, secondly, a primary infection of the lung gives a severe secondary enlargement of the glands, thirdly, the soft bronchial wall yields first to pressure and then becomes ulcerated The great enlargement of the right tracheobronchial gland, which is in close relationship to the right-main bronchus, accounts for the higher incidence of the disease on the right side

It is possible that the onset of emphysema may be determined in part by the site of the primary lung focus Of the 19 cases reviewed here a primary focus was identified in 7, but in only 2 of these was it present in the upper lobes, in the remaining 5 there was infiltration in the lower lobes It seems, therefore, that the anatomical relations of the hilar glands are such that those draining the upper lobes are more likely to obstruct the bronchus and produce lobular collapse,[12] while those draining the lower lobes may produce either collapse or obstructive emphysema

SUMMARY

Three new cases of tuberculous obstructive emphysema are reported, and 16 cases published by other observers are reviewed The condition is probably commoner than is usually supposed

Allergic diseases and obstructive emphysema are clinically similar

Screening is necessary, as well as radiography, in all children with a positive tuberculin test who are suffering from wheeziness, progressive stridor, asthma or dyspnœa

Bronchoscopy has a therapeutic as well as a diagnostic value

Obstructive emphysema may be the first presenting clinical feature in tuberculous children, and is liable to be misdiagnosed

I wish to thank Dr Donald Patterson and Dr Wyllie for permission to publish the notes of cases 1 and 3, and also Dr John Hayward and Mr Wilberforce Smith for their helpful criticism

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RECOVERY FROM THE INFECTION OF SUBACUTE BACTERIAL ENDOCARDITIS WITHOUT SULPHONAMIDES

By F Parkes Weber, M D Camb, F R C P
PHYSICIAN TO THE GERMAN HOSPITAL

A WELL-BUILT man of 52 came under my observation in November, 1939, six months after his arrival in England (May 15, 1939) At the age of 20 he had had rheumatic fever In October, 1938, his tonsils were excised, and about that time the question of subacute bacterial endocarditis (“ endocarditis lenta ”) seems to have been discussed, but the blood-culture did not confirm that diagnosis at the time, and the patient improved However, on March 16, 1939, shortly before coming to England, he had a severe cerebral stroke with coma and right hemiplegia lasting a few days, but with aphasia, alexia and agraphia of longer duration

When I first saw him on admission to hospital in November, 1939, though he showed no trace of the hemiplegia, he still had a remnant of the aphasia and was practising reading and writing After admission it was found that he had all the signs of subacute (or chronic) bacterial endocarditis—namely, a loud mitral systolic murmur, occasional fever, splenic enlargement (for a time), temporary trace of blood in the urine, cutaneous purpura in crops, recurrent tender “ Osler's nodes ” on the hands and elsewhere (one larger one on the forehead, about the size of a split-pea, took rather longer than the others to disappear), accelerated blood-sedimentation, and blood-cultures invariably positive for a *Streptococcus viridans* Nevertheless, his condition again improved, he could get about and was thinking of leaving England for America with his wife and children

On Aug 1, 1940, however, he had another attack of coma, this time with left hemiplegia, evidently due to right cerebral embolism (the first attack had, of course, been due to left cerebral embolism) In the course of many days he slowly recovered from the coma, but the left hemiplegia has persisted, together with complete (cortical) blindness Since this last embolism there have been no signs of active bacterial endocarditis, the last positive blood-culture was on April 12, 1940

REMARKS

The patient has recovered from the *Strep viridans* infection, but with terrible results from his cerebral embolisms Besides the cortical blindness and complete paralysis of the left upper and lower limbs he has various imperceptions or agnosias, including what Babinski termed “ anosognosia ”—that is to say, he is unaware and denies the existence of his blindness and hemiplegia (About this “ Anton-Redlich-Bonvicini syndrome" and other nervous features of the case I hope to make a further communication.)

Had sulphapyridine or one of the other sulphonamides been used in this case the "recovery" would have been attributed to it. The accounts of Friedman, Hamburger and Katz (1939), Witts (1940), Fletcher (1940 and 1941), Dockeray and Kawerau (1940) and Sevitt (1941) make one doubt whether treatment by heparin and a sulphonamide—introduced by Kelson and White (1939)—can ever be successful. Had heparin been used in the present case the patient would almost certainly have died from cerebral hæmorrhage. The evidence given by Capps (1939) shows that spontaneous recovery from subacute bacterial endocarditis, though extremely rare, does occasionally occur. The present case confirms this, and one is not justified in saying that the disease without special treatment is certainly fatal. Nor is one justified in saying that one had better give heparin and risk almost certain death from cerebral hæmorrhage.

Of course I cannot be certain that one of the sulphonamides had not been given before I first saw this patient in November, 1939, but even if it had been given it had failed to suppress the infection, which remained active at least till April, 1940. In a similar case I should nevertheless make a serious trial of sulphapyridine. In fact this drug, in combination with heparin, was to have been given, but owing to adverse reports on heparin the whole idea was given up and no chemotherapy was attempted.

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EPILEPTICS IN AIR-RAIDS

By J. Tylor Fox, M.D. Camb., D.P.M.
MEDICAL SUPERINTENDENT OF LINGFIELD EPILEPTIC COLONY

The full-blooded psychogenic theory of epilepsy supposes that the fits are no more than psychological reactions to environment in people endowed with a certain type of abnormal mental make-up. Conflict and emotional stress underlie the first fit that the patient experiences, and subsequent attacks are always due to the revival of the original unpleasant emotion by memory associations or exogenous stimuli. Obviously in this case fits are more likely to arise when the surrounding circumstances of the patient are more difficult than usual.

Few would now accept this theory as applicable to more than a very limited number of cases, but it is fairly common to find the start of epilepsy attributed to some unpleasant emotion, such as anxiety, worry or acute mental shock. After the last war, the fits in a large number of children coming under my care were put down to the strain of air-raids which had occurred before the patient's birth or at varying ages in early childhood, and the same cause is now beginning to be applied in epilepsies that have made their first appearance in the last few months. The intervals between the emotional stress and the appearance of fits are, however, so variable that the alleged connexion is in my view mostly of importance in fulfilling the desire of the parents to find a cause for their child's affliction.

Environmental factors undoubtedly play some part in determining the occurrence of fits in established epilepsy. A complete change of environment often has a pronounced if temporary effect, most often of a beneficial kind, as witness the common cessation of attacks when a patient is taken into hospital for observation. Excitement is said to cause fits. I have seen a very few cases where this is true, but as a generalisation it is false, as anyone can testify who has sat through a Wild West film in company with 100 epileptics. That boredom, anxiety and worry do predispose to fits in certain cases I am satisfied, but the relative unimportance of environmental factors is suggested by the absence of weekly fit rhythms. In a rather exhaustive search through a large number of fit records all kinds of long distance rhythms were found—monthly, bi-monthly, quarterly and even fortnightly, but not one weekly rhythm. As a seven-day rhythm is perhaps more obvious in institutions than in the community generally, one would have expected, if environment was of importance, to find some patients the occurrence of whose fits was determined by some factor in the weekly routine.

During the last few months there have been opportunities to observe the effect of unpleasant emotion on a group of about 250 epileptic children and 200 adults. The group comprises people of normal or retarded intelligence, but not of low grade mental defect. There were days last summer of considerable air activity with fighting directly overhead and planes brought down in the immediate neighbourhood; there have been several nights when bombs have exploded within a short distance of our homes. These events have meant sirens, a hasty exit from school or workshop, or an unwelcome routing out of bed, on occasion a rush to a rather overcrowded protected room. The scene was well laid for observation of the effects of unpleasant emotion upon epileptics—and nothing happened. There was no general increase of attacks on days or nights of air activity, nor has any evidence been found of increased fits in individuals. At least 95% of our patients have to all appearances been unperturbed, and the resultant mental upset in the remainder has not been striking. Are they heroes or stoics? Probably the latter. It may be suggested that many of them have increased resistance to painful mental impressions as they undoubtedly have to painful physical impression, a resistance that is no doubt aided by defective imagination; but this is not altogether consistent with the hypersensitiveness which is claimed as a cardinal feature of the epileptic temperament. A further factor may be found in medication. Most of our patients are having anticonvulsant drugs in moderate doses, rarely exceeding bromide gr. 30, or phenobarbital, gr. 2, in the 24 hours, and these have no doubt helped to discourage extra fits or mental upset. It need scarcely be said, perhaps, that the staff have had impressed on them the importance of appearing unconcerned in the face of danger, for our patients, with their immature outlook on life, will be more prone than other people to take their cue from those in authority. Moreover it must be said that although the noises, alarums and excursions without seemed sometimes to be very close at hand, so far we have not experienced (apart from a few broken windows and damaged tiles) any actual damage to person or property. Perhaps events so far have kept outside the circumference of the epileptic's well-known egocentricity. Bring them a little nearer home, and the results may be different.

So far as it goes, however, our experience has shown that acute emotional stress is without effect on the incidence of fits in people suffering from epilepsy, and gives rise to surprisingly little mental upset. This conclusion is confirmed by a social worker who spends her time overseeing and advising epileptics living in the London area. She tells me that many of her cases have had intimate and even repeated experience of bomb explosions, but that so far she has not found one whose attacks have been increased. One must not, of course, confuse the causes of epilepsy with the precipitating causes of fits in patients who are already epileptic, but I suggest that our experience fits into the picture of an illness of physical rather than mental origin, and confirms the view that a sharp line can be drawn between epilepsy and the psychoneuroses.

SUMMARY

Air-raids and air-raid alarms have afforded an opportunity to observe the effect of unpleasant emotional stress on a large group of epileptics. Contrary to expectation there has been no increase of fits, and in very few cases has there been evidence of mental upset. It is suggested that these observations have significance both in the ætiology and the treatment of the disease.

EFFECTS OF AIR-RAIDS
ON THE INCIDENCE OF FITS IN EPILEPTICS

BY J SHAFAR, M D Glasg, M R C P, D P H
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THIS study is based on a series of unselected cases of so-called idiopathic epilepsy which were under observation between March, 1939, and March 1941 Cases of the following kinds were excluded those with any neurological disorder (such as neurosyphilis or cerebral agenesis, those who could not be relied on to keep accurate record of the number of their attacks, those whose petit-mal attacks were so frequent as to be difficult to count, those who, owing to transport difficulties, had been unable to obtain their usual supplies of anticonvulsants, those who showed considerable mental abnormality, and those absent from London for more than 14 days between September, 1940, and March, 1941

The number of attacks were compared over four periods of 6 months each, the first beginning on March 1, 1939, and ending on Aug 31, 1939, and the last beginning on Sept 1, 1940, and ending on Feb 28, 1941 All cases had had 3 months' treatment before March 1, 1939, and were therefore reasonably stabilised, some 80% had been under treatment as outpatients for at least 18 months Attacks are classified as major and minor, the terms are not meant to correspond exactly with grand mal and petit mal, but to give some idea of the severity of the seizures

The first period of 6 months preceded the outbreak of war, the second and third periods together represent the first year of war and the last period the phase of heavy bombing of London The number of fits in a given case between March, 1939, and September, 1939, can be used as a standard of comparison Although air-raids were few and light between September, 1939, and September, 1940, the capitulation of France caused much anxiety and this period provides an opportunity for examining the effects on epileptics of severe emotional strain unaccompanied by fear of death The last 6 months (September, 1940–March, 1941) produced an unprecedented situation for epileptics Since they are ineligible for military service it has been impossible, until now, to study their behaviour when exposed to warfare, for the same reason no medical reports of the last war are available for comparison Of 77 cases investigated 35 were male, 42 female, ages ranged from 7 to 61, but most were adults in middle life The total number of fits recorded in this group of patients in the four periods were as follows —

	Major	Minor
March–September, 1939	39	176
September, 1939–March, 1940	24	165
March–September, 1940	23	208
September, 1940–March, 1941	27	169

There was thus little difference in the incidence of attacks before the war, during the first year of war, and during the 6 months of heavy raids In most patients the frequency of attacks was unchanged and with one or two exceptions the rest only showed slight numerical alterations These small differences were similar to those found in epileptics under normal conditions and have no significance A need to increase the dosage of sedatives would have been taken as evidence of deterioration, but this was only required in 2 cases and does not affect the general findings It is fair to conclude that neither the first year of war nor 6 months of aerial bombardment affected the incidence of epileptic attacks Age and sex of patients did not appear to be important

The emotional response to danger was also studied with a view to noting the development of nervous disorders In most patients fear was almost completely absent during raids and anxiety symptoms were few and mild No hysterical attacks were reported and no other manifestations of hysteria were encountered

Many papers have been published propounding psychological theories to account for epilepsy and stressing the rôle of emotion in precipitating convulsions Epilepsy has even been explained as the result of suppression of an impulse to escape danger Exposed as these patients were to great danger and emotional stress they showed no retrogression of their epileptic condition and this must go far to vitiate such theories It is held by many that epileptics have a characteristic temperament, being irritable, impulsive, self-centred and volatile, this, however, has not been the experience of many observers If it were the rule, these temperamental tendencies should become more obvious in the tense atmosphere of air-attacks, no such reactions were met, and relatives were usually full of praise for the solicitude shown by epileptics for others, and their lack of self-interest

SUMMARY

Eighteen months of war and six months of heavy air-raids have had no influence on the incidence of epileptic attacks in a group of 77 patients

No effect on their general health was noted and no psychological complications were encountered

I wish to thank the hon medical staff of the West End Hospital for Nervous Diseases for allowing me access to their cases

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Reviews of Books

Practical Neurological Diagnosis

With special reference to neurosurgery 2nd ed By R GLEN SPURLING, M D Springfield, Illinois Charles C Thomas Pp 239 22s

THIS guide to the examination of the nervous system simplifies the approach to clinical neurology, and encourages exact observation and careful interpretation of clinical signs Professor Spurling of Louisville has succeeded in modifying the text of the first edition to include recent material without enlarging the book or entering into vague controversy The greater part deals with the bedside examination of the patient, and there are sections on the significance of changes in the cerebrospinal fluid and on the technique and application of radiology of the head and spine Short glimpses of recent physiological investigations are introduced to lighten the text, and cumbersome names and references or pedantic clinical tests are absent The title is a trifle misleading, for differential diagnosis is not attempted and clinical syndromes are not described, however, the author obviously intends the book to be used in the ward It is well illustrated and pleasantly laid out, but the reproduction of the radiograms is disappointing The text is certainly a model of lucid and accurate teaching

Canning Practice and Control

(2nd ed) By OSMAN JONES, F I C, and T W JONES, B Sc London Chapman and Hall Pp 311 32s

THIS book deals with practical canning in all its aspects—such as factory structure, equipment, the various can problems and actual canning methods—and with the many laboratory examinations required Chemical and bacteriological examinations are made of all the different foods canned and in addition tin-plate, solder and rubber must be studied, cans must be examined for leaks and analyses of can gases must be made Additions in this edition deal with the new process of lacquering the cans, metallic contamination of canned food contents, packing in glass containers, notes on thermophils and their isolation, the effects of canning on nutritive values, and chemical determinations of vitamins The laboratory section is on the whole well done, particularly the chemical aspects, but the bacteriological questions involved in canning are complex and the descriptions given of organisms are far from complete The section on food-poisoning is inadequate and the problems of the toxins of the salmonella group, of *Bacillus botulinus* and the staphylococcus are scrappy and do not tell the whole story An extended account of the bacteriology of pickling fluids and the effect of salt and nitrates on bacterial life would also have been of value In discussing milk examinations the authors only describe the old methylene-blue reductase test which is unsatisfactory, the new official test is not *mentioned* These are minor criticisms of a full and well-illustrated book designed to suit the needs of the *laboratory technician dealing with* this aspect of food The authors bring out the essential part the *laboratory* has to play in successful canning

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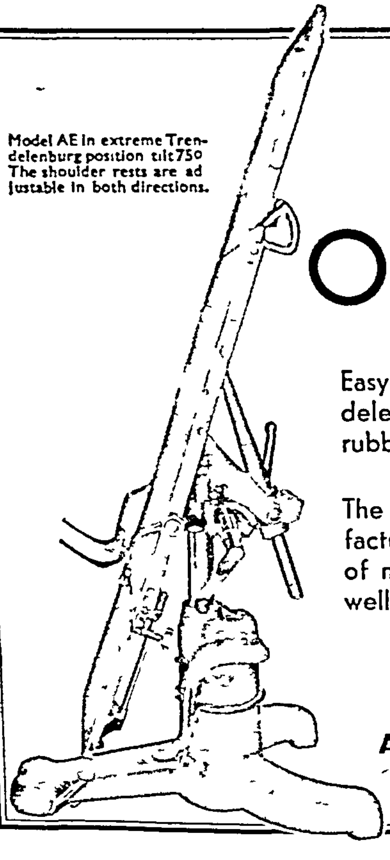

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THE LANCET

LONDON SATURDAY, MAY 17, 1941

MEASURING UP THE MISFITS

In the last war the term "martial misfit," alliterative but happy, was applied to soldiers who broke down with neurotic illness, apparently owing to their unfitness for the rigours and privations of military life. Among the misfits the most prominent, and it would generally be thought the most remediable, are those whose vocation in civil life is remote from what they have to do as soldiers—the short-sighted clerk who is put in the Pioneers, the mechanic who is put in the cookhouse. There are two points at which misfits may be dealt with: at the time of recruitment and allocation, or when the effect of unsuitable work has become evident in the form of neurotic illness. In addition, there are men skilled in a civilian trade who manage quite well at some other task in the Army, but who have to be combed out and reallocated when an urgent demand arises for men with their special training. Thus there is every advantage in early selection of men for the military work to which their previous experience and inherent aptitudes fit them; in this way round pegs are early put in round holes, and in a fair proportion neurotic incapacity is made less likely, if not wholly averted.

The experience patiently accumulated by industrial psychologists and others closely in touch with vocational selection, both in the Army and elsewhere, has not yet been fully used. Much nicety in selection and placement is certainly not called for in the Army; soldiers must be capable of tackling a variety of jobs, and man is so adaptable an animal that most of the normally intelligent ones are capable of being competent soldiers, especially now when armies deal largely with mechanised equipment and every boy is an amateur mechanic. But this does not remove the need for sensible selection. The advice of psychologists is said to be increasingly sought on vocational testing and allocation, but it is not only a matter of aptitudes; temperament and other factors, in the province rather of the psychiatrist, may play an even larger part in determining a man's suitability for a particular army job, or for the Army at all. The inclusion among soldiers passed for duty of grossly neurotic and feebleminded men means expense, delay and waste. The medical boards of the Ministry of Labour seem to have called but seldom for a psychiatric opinion on men who are at least as questionable as those with cardiac murmurs, dubious râles, hammer toes, dyspepsia or absent knee-jerks. We are not so rich in man-power, however, that we can afford to let anyone be idle because he is not capable of full effort. Any scheme which contemplates closer scrutiny of men's suitability should also have in mind alternative work to which they can be allocated, if the ordinary duties of a soldier are beyond their capacity.

In the United States the Selective Service System exists to provide men for service and training in the armed forces. This body, besides undertaking the examination of registrants at its national headquarters, has provided an exhaustive classification[1] of physical standards for the guidance of their own physicians and the members of local examining boards. Registrants are classed as acceptable for general military service, for limited military service, or to be rejected. Under the heading of mental and nervous disorders, those accepted for general service must have a normal nervous system, normal understanding and comprehensible speech, and must be otherwise physically and mentally fit; mild muscular tremors are allowed. Men passed for limited service are those with stammering or muscular tremors, which, though severe, have not prevented them from following useful vocations. Rejected men have insanity, epilepsy, postencephalitic syndrome, drug addiction, chronic alcoholism, stammering so severe that they cannot express themselves clearly or repeat commands, psychoneurosis, chorea, syphilis of the nervous system, post-traumatic cerebral syndrome, disseminated sclerosis, paraplegia or hemiplegia, syringomyelia, muscular atrophies or dystrophies, hysterical paralysis, neuritis or neuralgia which is not temporary and has prevented the applicant from following a civil vocation, brain tumours, cerebral arteriosclerosis, or sexual perversion. The criteria to be adopted in diagnosing these various conditions are also set out, and it is clear that those expected to give most difficulty are insanity, mental defect, and psychoneurosis. In another place[2] the Selective Service System has published an outline of a minimum psychiatric examination to guide their physicians, many of whom are not psychiatrists. The examination follows common-sense lines. The examiner is advised to use whatever ordinary conversational openings offer; thus the man is asked what job he has been doing, how many others are employed by his firm, whether he finds them a good crowd, whether he likes the work and whether his employer seems fair. If he thinks he has had unjust treatment what has been the trouble? What does he do in his spare time? Is he sure of himself or shy, with men or women, or both? It may be possible to find out whether his mates respect his opinion or not. If anything unusual comes to light it should be followed up by further questions until the examiner feels he understands it. The man must be asked about his habits and whether he can break them at will. Can he, for instance, give up smoking when he chooses?

During this inquiry the examiner is keeping in mind five categories of handicap which he hopes to exclude; these are (1) mental defect, (2) psychopathic personality, (3) gross mood disorder, (4) psychoneurosis, (5) prepsychotic, psychotic or post-psychotic states. Mental defect is suggested by slowness or stupidity in complying with clear instructions; the school record will often give additional evidence and the diagnosis can be confirmed or refuted by sending the man to a psychologist for an intelligence test. The man with a psychopathic personality, though of average intelligence, is more or less incapable of profiting by experience; he has proved unreliable and disappointing to his family and friends again and again, and has habitually evaded responsibilities. Rebuffs deflect him from his goal. He is not adaptable to employment or group life and is disqualified for any form of national service Those with abnormalities of mood have shown episodes of unreasonable elation or depression , any who have received medical or nursing care for episodes of the kind should be rejected So should those whose mood changes are known to impair their judgment seriously, but this is difficult to determine in a single interview, and could probably be decided best on information gained from the man's own doctor Psychoneurotic disorders fall roughly into hysterical, anxious and obsessional patterns The hysteric is usually eager to talk about himself and his narrow escapes ("the doctors all thought I was a goner") His physical signs, if he has any, do not conform to anatomical lesions The morbidly anxious man may show psychosomatic symptoms during examination, such as sweating, a rapid pulse and tremors The obsessional may perform some ritual in carrying out a simple action , for instance, he must always fasten his shoe laces or his tie in a special sequence Symptoms of these kinds, not important in themselves, may guide the examiner to seek a second opinion from a psychiatrist Patients with severe mental disorder or personality deterioration will of course be easy to detect, but those in the early stages of a schizoid or paranoid reaction may not appear to be seriously ill The schizoid patient is often shiftless, morose, untidy and uncommunicative , his childhood has usually passed for normal and deterioration has set in between the ages of 12 and 25 Paranoid patients in the early stages are suspicious, touchy and resentful But definite evidence of prepsychosis may be absent, and the most the examiner can say is that the man gave him a queer impression The guiding rule should be "When in doubt, get a psychiatric opinion "

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[1] *J. Amer. med. Ass.* Nov. 2, 1940, p. 1552.

[2] *Psychosom. Med.* 1940, 2, 494.

ATYPICAL PNEUMONIA

A FORM of pneumonia which because of the divergence of its signs and symptoms from either the lobar or bronchopneumonic kind was first called acute pneumonitis[1] and since then disseminated focal pneumonia, virus pneumonia and atypical bronchopneumonia is now being studied intensively in America from both the clinical and laboratory aspects Its clinical features, as described in this country by SCADDING[2] in 1937 and by the American workers, are an influenza-like onset with fever, headache, sweating and general malaise , a troublesome non-productive cough , meagre physical signs (impaired percussion note usually accompanied by râles) with X-ray evidence of a diffuse or patchy consolidation , absence of leucocytosis , and a febrile course of 7–10 days in mild cases or up to 3–4 weeks in more severe ones, without any response to chemotherapy Secondary infection may be added, with purulent sputum and leucocytosis, or the infection may drift into a chronic stage Pathologically there is peribronchial infiltration with mononuclear cells and the alveolar exudate consists mostly of mononuclears , later there is focal interstitial fibrosis

The infectious nature of this disease seems to be established MURRAY,[3] for instance, reported 146 cases among Harvard students, mostly in the winter 1938–39, and the disease has been common among hospital personnel—interns and nursing staff The incubation period is apparently 2–3 weeks , young adults seem to be specially affected and the greatest incidence is in early winter, in contrast to the spring prevalence of lobar pneumonia Attempts to isolate a specific causal bacterium have been unsuccessful, and both the clinical and epidemiological findings suggest a virus ætiology Last year the isolation of two different causative agents was reported almost simultaneously by two different teams of research workers In the spring of 1940, 15 cases of acute pneumonitis occurred among the 153 employees in one building of the National Institute of Health, Washington[4] The clinical picture of these cases corresponded fairly well with that of atypical pneumonia, with severe and persistent headache a prominent feature The most likely vehicle of infection was dust, and it is noteworthy that most of the affected people worked on the same floor as or the floor above that in which work on rickettsias was being done , though none of the workers in the rickettsial department itself developed the infection From the blood of 2 out of 3 patients from whom specimens were taken, and from the spleen of the only patient who died, rickettsias of the variety responsible for "Q" fever* were recovered by intraperitoneal inoculation of guineapigs Searches for a virus were unsuccessful, and Weil-Felix tests with *proteus X19* were also negative Serum was obtained in convalescence from 12 patients, and in 9 instances adequate antibody to the "Q" rickettsia was present, whereas antibody was only feebly present in 2 out of 20 control sera and in the sera of 5 out of 10 workers in the rickettsial unit This outbreak of pneumonitis was entirely confined to laboratory staff who were probably exposed to rickettsias in the dust of the building The infection did not spread to family or hospital contacts Thus it has features which separate it, epidemiologically, from atypical pneumonia arising in the general community

About the same time as this report appeared, WEIR and HORSFALL[6] recorded the results obtained with nasopharyngeal washings from 4 cases of atypical pneumonia in different parts of New York state Attempts to infect a wide variety of laboratory animals in New York were unsuccessful, and the investigators betook themselves to Kingston, Jamaica, where they were able to produce an experimental infection with pneumonic consolidation in the mongoose, an animal which is akin to the ferret, is very ferocious in captivity, and may not be imported into the United States The pneumotropic agent isolated was filtrable, resisted glycerin, freezing and drying, could be propagated on the chorio allantoic membrane of chick embryo, and was not apparently a natural parasite of the mongoose It was neutralised by the serum of patients and mongooses convalescent from the pneumonic infection, *but not by anti-influenza-A* serum The evidence thus seems convincing of the discovery of a new virus capable of producing an fectious pneumonitis in man The virus ætiology is received further support from the finding by DAMS[7] of cytoplasmic inclusion bodies in the onchial epithelium of 9 fatal cases out of 32 infants ho developed an atypical pneumonia similar in type that described for adults

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[1] Allen, W H *Ann intern Med* 1936, 10 441
[2] Scadding, J G *Brit med J* 1937, 2 956
[3] Murray, M E *New Engl J Med* 1940, 222, 565
[4] Hornibrook, J W , Nelson, K R Dyer, R E Topping N H and Bengtson, I A *Publ Hlth Rep Wash* 1910 55, 1936 and 1945

* Q fever as originally described by Derrick[5] in Australia is characterised by intense headache and fever lasting from 6–7 days up to 3–4 weeks in certain cases The rickettsias are readily recoverable from the blood by guineapig inoculation, Weil Felix reactions are negative

[5] Derrick E H *Med J Aust* 1937 2 281
[6] Weir, J M and Horsfall, F L *J exp Med* 1940, 72 595

Yet another possible cause of acute pneumonitis has en reported Encephalitic infection with toxoasma, a protozoon parasite a little like leishmania d common to many animals, has been reported in merica, particularly among newborn children, and ABIN[8] has lately described 2 further cases in older hildren PINKERTON and HENDERSON[9] also record cases of a systemic typhus like infection with toxolasma, the diagnosis of which was made by guineapig oculation of the patient s blood Clinically there as evidence of lung involvement, and pathologically or both patients died) an interstitial pneumonitis as present with toxoplasma demonstrable in the ells of the alveolar wall SABIN found that this rotozoon when injected intraperitoneally produced cherry-red gelatinous pneumonitis in the mouse here seem then to be a variety of agents capable of roducing atypical pneumonia A similar type of neumonic infection has been recognised among troops n this country, and it is hoped that war-time duties ill not prevent our research workers from taking a and in solving this apparently complex problem

PERIODIC PARALYSIS

PERIODIC paralysis has excited fresh interest in many quarters since WALKER[10] in 1935 reported LLOTT's discovery of a low serum-potassium level n a patient of hers during an attack The clinical eatures of the condition, with its curious flaccid aralysis of the limbs coming on apparently spontaneously and lasting hours or days, passing off pontaneously and leaving the patient entirely free rom signs or symptoms, were already well known The significance of potassium was hinted at by early laims that various potassium salts given by mouth would prevent or abbreviate the attacks, and by BIEMOND and DANIELS s unregarded finding of a ow potassium-level in one patient After ALLOTT had rediscovered this phenomenon, he and others soon demonstrated a fairly consistent lowering of serum potassium during attacks, and regular relief of attacks by administration of potassium salts Further observations were made on the induction of attacks by insulin, glucose and adrenaline, but the mechanism whereby these agents influence potassium concentration in either normal blood or that of subjects of the disease remained obscure Since that time no striking advance has been made in the elucidation of the fundamental problem, but a thorough search of the literature recently made by Dr JOHN H TALBOTT[11] has brought to light a number of observations, clinical and experimental, that may not have been widely appreciated The numerous cases reported are by no means all hereditary, many are apparently non-familial and the textbook name of "family periodic paralysis" should therefore be widened to simply "periodic paralysis," sometimes hereditary, sometimes sporadic Where the condition is familial, the inheritance makes it appear dominant in some families, recessive in others Potassium is not the only blood constituent to be disturbed during attacks, there is also a significant fall in serum phosphate but its relation to the passage of potassium out of the blood (or of sugar through the blood) is not yet determined It has been made clear that the potassium and phosphate are not lost in the urine but migrate to some site in the tissues The fall in serum potassium does not alone determine the paralysis but is an essential factor or accompaniment It always occurs during paralysis, but there may be a similar fall in normal people, or even in subjects of the disease, without paralysis developing That potassium administration relieves paralysis suggests that the lowered serum-potassium level is a factor in causing it, this would be expected to act locally on the muscles or nerve endings involved, but in one observation injection of potassium chloride into the brachial artery, followed by venous occlusion for 8 minutes, failed to restore power to the arm The mechanism of the potassium effect may therefore be a complicated or indirect one

In patients with Addison's disease the administration of desoxycorticosterone acetate may render them liable, after large carbohydrate meals, to attacks of flaccid paralysis, in these the clinical features, the lowered serum potassium and phosphate, and the improvement following potassium injection all resemble what is seen in periodic paralysis In both conditions, too, an increase in the volume of plasma and interstitial fluid, and acute cardiac dilatation have been observed Another suggestive association is that of periodic paralysis with thyrotoxicosis, of which 35 or more examples have been reported This raises the question whether the continuing muscle weakness in the legs, sometimes observed in thyrotoxic patients and once labelled Basedow's paraplegia, may not have a mechanism akin to that of periodic paralysis, in one such patient TALBOTT observed a greatly reduced serum-potassium level (2 1 milliequivalents per litre) In the earlier records periodic paralysis occurred surprisingly often in association with malaria, the attacks of which seemed to precipitate paralysis It appears from this wider conspectus that periodic paralysis is to be regarded rather as a manifestation than as a disease, different disease processes, in appropriate conditions, may evoke it Even the word "syndrome," preferred by TALBOTT, is scarcely appropriate Its mechanism is as yet only partly elucidated Its treatment, according to present knowledge, is the administration of 2–15 g of potassium chloride daily, spread over the 24 hours and including a generous dose at bedtime

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The quota of alien students who may attend the British Postgraduate Medical School at Hammersmith to study for a British qualification is now full and for the present no more students seeking a registrable qualification can be accepted Doctors of enemy alien or enemy occupied territory may however be admitted to the school for postgraduate work if they have registered with the Central Medical War Committee for hospital appointments with a view to securing registration by the General Medical Council They must also have obtained a permit from the Aliens War Service Department for permission to work in an E M S hospital, and they must bring a recommendation from their own refugee organisation.

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[7] Adams J M *J Amer med Ass* March 8 1941, p 925
[8] Sabin A. B *Ibid* March 1, 1941 p 801
[9] Pinkerton H and Henderson R G *Ibid*, p 807
[10] Walker M B *Lancet* 1935 2 47
[11] *Medicine*, February 1941 p 85

Annotations

DISCHARGE FROM THE NIPPLES

THE early detection of mammary cancer is so important that we must know the precise value of every sign which may accompany the disease, and if possible express such values in numerical terms Unfortunately data on which the significance of signs can be stated mathematically are not often available Hinchey[1] records that of 1051 patients attending the tumour clinics of two American hospitals because of mammary lesions 88, or 8 3%, had discharge from the nipple In 54% the discharge was bloody, in 20% serous, the remaining discharges were classified as milky, watery or miscellaneous The lesions responsible for discharge, whatever its character, were cancer in 36%, chronic cystic mastitis in 27% and duct papilloma in 10 5% In the remaining 27% the causes are listed as hormonal dysfunction, inflammatory cysts, fibrous mastitis and miscellaneous conditions If, like Hinchey, we regard chronic cystic mastitis and duct papilloma as precancerous conditions, 73% of all the patients with discharge from the nipple must be regarded as having cancer or being in serious peril of it Additional figures are given in the report for 1940 of the British Empire Cancer Campaign, in which it is stated that discharge from the nipple was an early sign in 94 (8 5%) of the 1061 cases of breast cancer analysed, and in 21 patients the earliest sign For statistical purposes, every case record of mammary cancer ought to state whether discharge from the nipple was present or not, if present its character should be mentioned When the disorganisation caused by the war is past such an aim is likely to be realised through the admirable work of the clinical cancer research committee of the B E C C From their future reports we may learn to assess the significance of discharge from the nipple, as regards both its naked eye appearances and microscopical characters, for Cheatle and Cutler[2] have pointed out that cancer cells can occasionally be recognised in smears of a mammary discharge and in some instances an early diagnosis of cancer has been established by discovering them

ACROCEPHALY

THE sutures of the skull prevent adjacent bones from uniting, and allow growth of the cranium and its contents When a suture disappears the bones fuse and growth ceases locally If the occipitoparietal lines disappear prematurely, development takes place at the frontoparietal sutures and to a less extent in the metopic and interparietal regions The front of the skull consequently bulges disproportionately upwards and forwards, while the back slopes down to the neck The sharply pointed skull is described as oxycephalic or acrocephalic Premature fusion of the bones in other places produces skulls of different shapes When the occipitoparietal and frontoparietal lines disappear synchronously, interparietal growth continues and a tower skull is formed (turricephaly) If, on the other hand, fusion occurs at the interparietal lines, growth takes place forwards and backwards but not upwards—the cranium becomes unduly long and looks somewhat like a boat turned upside down (scaphocephaly) Asynchronous fusion of bones on each side produces a lopsided skull (plagiocephaly) The bone in these hypoplastic areas is flat, elsewhere it is ballooned outwards When fusion is widespread the intracranial pressure is much increased, landmarks such as the anterior fontanelle are displaced, and peculiar prominences become visible The bone is thin and smooth, and the diploe absent "Digital markings" (rounded areas of thinned bone) are found on the inner table where the cerebral convolutions press against it The bone may actually give way in a "spontaneous trephine" The middle fossa is often thrust forward so that the orbits are shallow and exophthalmos or even subluxation of the eyeball are produced and the eyes may be widely separated This separation is called hypertelorism, but is distinct from the disease of that name in which overdevelopment of the lesser wings of the sphenoid bone causes wide separation of the eyes Optic atrophy is rather common The maxilla is often hypoplastic and the lower jaw relatively prognathous with the lower lip drooping forward and down, while the nasal passages and sinuses are small, the palate narrow and high and the nasal septum grossly deviated, the nose consequently becomes hooked and the lips take on an inverted V shape, the disease in this form being known as the craniofacial dysostosis of Crouzon The changes so far described are in bones which are preformed in membrane, but there may be associated abnormalities of the cartilage bones of the base of the skull and of the limbs, particularly in the hands and feet There is also webbing of the fingers and toes in acrocephalo syndactyly or Apert's disease Associated mental defect is not uncommon, and the disease seems to be inherited in a dominant manner These idiosyncrasies of growing bone have diverse and puzzling names The key to their pathological mechanism was suggested over twenty years ago by Park and Powers, and the time is ripe for Ferriman's[1] monograph, a scholarly dissertation embodying many of his own observations as well as the products of wide reading His remarks on treatment show that it is not enough to consider these unfortunate patients merely as an assembly of bizarre heads and blind eyes, fit to be shown to a collection of curious clinicians Trinculo put his finger on our national taste for monsters

> "What have we here ? A man or a fish ? A strange fish ! Were I in England now, (as once I was,) and had but this fish painted, not a holiday fool there but would give me a piece of silver there would this monster make a man, any strange beast there makes a man when they will not give a doit to relieve a lame beggar, they will lay out ten to see a dead Indian Legged like a man ! and his fins like arms ! "

Earlier and more precise diagnosis, and frequent examination of the children of affected adults, could lead to operation for the prevention of optic atrophy, gross exophthalmos or ugly deformity Operations should be done at an early age In infants, cruciate resection may allow the cranium to open "like the petals of a flower" In older children the bone of the vault may be cut into a mosaic of small pieces, to allow expansion wherever it may be necessary

ANOXIC PHENOMENA

THE symptoms which arise when a healthy person is deprived of his usual supply of oxygen are best known to anæsthetists and aeronauts It is the business of the anæsthetist to avoid the very beginning of asphyxia and to recognise the earliest signs of its approach, but only of recent years, largely through the work of Courville, has he become aware of the anoxic origin of post anæsthetic states not previously attributed to lack of oxygen The anoxia associated with the inhalation of anæsthetics is not identical with that produced by direct oxygen lack as seen in those exposed experimentally to rarefied atmospheres Discussing clinical manifestations of oxygen lack at the Royal Society of Medicine on May 2, Dr E A G Goldie pointed out that both signs and symptoms depend on whether anoxia is produced gradually or suddenly If suddenly there is immediate loss of consciousness without preliminary sensation, on recovery the subject is amnesic for the experience and refuses to believe he has been unconscious ll When anoxia is gradually produced there is a ling sensation followed by euphoria which dangerly masks an inability to perform accurate movements subject feels he is carrying out his duties with sual ease and success The disastrous results to an nan who is really mistiming and muddling his move- nts may be imagined Some people exposed to dual anoxia faint after experiencing the unpleasant sations which commonly precede that event, the se rate may then rise to about 120 Sudden anoxia ssociated with little respiratory change, though there ften cyanosis

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[1] Hinchey, P R *Ann Surg* March, 1941 p 341

[2] Cheatle, G L and Cutler M Tumours of the Breast, London, 1931

[1] Acrocephaly and Acrocephalosyndactyly By David Ferriman D M Oxfd M R C P London Humphrey Milford Oxford University Press Pp 119 10s 6d

RUPTURED URETHRA

THE rise in and the effects of enemy bombing must ult in an increase in cases of ruptured urethra The mage may either follow ' straddle ' injuries to the ineum or may complicate fracture of the pelvis The ter type of case is by far the more serious When the vic bones are fractured the usual site of injury is the mbranous urethra and according to Baer[1] rupture urs in 1–2% of all pelvic fractures It is brought out mainly by lateral compression of the pelvic girdle e compression causes collapse of the pubic and ischial ches, and often fracture of the sacrum As a result the angular ligament is torn with damage to its enclosed uctures notably the membranous urethra, pudendal ssels and sphincter muscles Subsequent repair is fficult because the prostate and bladder are pushed wards and backwards, and the two ends of the ptured urethra are displaced leaving an interval tween them of 1–2 in Moreover the patient may be badly shocked, and his bony injuries so serious that a ng and difficult operation is the last thing to be desired t unless the rupture is repaired a lifelong deformity ll result, and the patient be condemned to wear a rmanent suprapubic tube Harrison[2] describes 21 ses of rupture of the urethra treated in the Peter Bent righam Hospital Of these 12 involved the bulbous nd 9 the membranous urethra all of the latter being a mplication of pelvic fracture It may be difficult he oints out, to elicit evidence of rupture until some time fter the accident the patient may have voided urine short time previously, and shock has the effect of iminishing renal secretion Usually suspicion of rethral damage is aroused by the appearance of blood t the meatus A differential diagnosis must be made etween rupture of the bladder and rupture of the rethra If the bladder is intact and the membranous rethra ruptured, the bladder can often be palpated as a ymmetrical rounded mass in the midline of the pelvis areful rectal examination is necessary If the prostate annot be felt, and the rectum is compressed by a soft mass in the pelvis there is almost certainly a complete rupture of the membranous urethra The rectal findings demonstrate that the prostate and bladder have been torn from their attachments and displaced upwards by a large and increasing retrovesical hæmatoma In time this is advertised by swelling and discoloration of the perineum The presence of a mass in the suprapubic or inguinal region indicates either a rupture of the membranous urethra or of the anterior wall of the bladder Passage of a catheter gives little information and is risky Even if a little urine is obtained it is impossible to be sure that the tip of the catheter has entered the bladder and that it is not tapping a pool of extravasated urine It is possible also by the passage of a catheter to convert a partial into a complete rupture of the urethra

Harrison maintains that as soon as the patient's condition justifies anæsthesia an exploratory suprapubic cystotomy must be performed All blood and urine are aspirated from the prevesical space and bony fragments elevated from the lacerated urethra The bladder is then opened and examined for evidence of injury A sound is passed through the penile urethra and guided in its passage through the displaced prostatic urethra by the index finger of the right hand placed in the orifice of the vesical outlet Powers and Smith[3] have emphasised the value of retrograde instrumentation when urethral instrumentation proves difficult By one or other method Harrison threads a rubber catheter through the whole course of the urethra, so that it may act as a splint This indwelling catheter is anchored securely by means of a silk suture which is attached to the abdominal wall Perineal drainage of extravasated blood and urine is essential finally a drain is left in the prevesical space and the bladder closed round a Pezzer tube At varying times after the operation (usually several weeks) the urethral catheter is withdrawn but the silk suture is left in position so that another catheter may be inserted if it is wanted Harrison recommends that a urethrogram should then be made If there is no extravasation of the opaque fluid the catheter is not replaced, but the silk thread is retained as a guide for the passage of instruments When the surgeon is satisfied that the urethra is healed the suprapubic tube is removed and the fistula allowed to close This type of injury is, of course, extremely serious, and even when careful treatment is promptly given the result cannot often be regarded as brilliant Of the 9 cases reviewed 2 died from shock on the day of the accident and 3 from complications within a week In larger series a fatality of 20% must be expected when treatment is begun within twelve hours after injury when treatment is delayed the fatality may reach 90%

VIRULENCE OF THE TUBERCLE BACILLUS IN MAN AND ANIMALS

THE work of Stanley Griffith for the Royal Commission on Tuberculosis was begun in 1903 so that he had a vast experience on which to draw when he discussed the virulence of the tubercle bacillus[4] He classified animals into three groups, according to the way in which they react to human, bovine and avian types of tubercle bacillus first a susceptible group containing the guineapig and various species of apes and monkeys, secondly, a resistant group including the dog, rat and mouse, and thirdly, an intermediate differentiating group comprising calf, goat, horse, sheep pig cat and rabbit The rabbit is generally used in laboratory work for the purpose of differentiation Shortly before the war attention was drawn to tuberculosis occurring in the field vole (*Microtus agrestis*) under natural conditions Griffith noted that this animal is much more susceptible to the bovine than to the eugonic human strain, experiments were in progress when the war broke out to determine whether it could be used in type determination Of late years tuberculosis has proved to be not uncommon in the mink and silver fox Lovell and White found[5] that of 40 mink examined 17 had tuberculous lesions, 15 being generalised It is the custom of breeders of many fur-bearing animals to feed them on raw meat to develop a good coat and the meat may be the source of the infection Probably, therefore, the strain is usually, if not always, a bovine one Griffith regarded the bovine bacillus as at least as virulent for man as the human bacillus, and quoted as evidence the proportion of bovine strains, isolated from cases of tuberculous meningitis in Great Britain In the under 15 years group, 26 5% of cases in England and 28 3% in Scotland were traceable to bovine infection, in the 15 years and over group, the figures were 16 6 and 26 2% The bovine strains isolated from cases of pulmonary tuberculosis in England account for only 1 6%, and for only 1% in Wales, but in Scotland they are responsible for 7%. The incidence of bovine phthisis is higher in Scotland in districts where the consumption of raw milk is greatest, and in about a third of the cases the evidence points to the alimentary tract as the portal of entry. About a sixth of the cases were in milkers and farm servants. There is bacterial evidence also of the transmission of the bovine bacillus from man to man, and one instance of its transmission from a farm servant to dairy cattle. These figures are particularly important now, when there is reason to believe that owing to war conditions tuberculosis in cattle is increasing.

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[1] Baer W S Quoted in Young's Practice of Urology, Philadelphia, 1926 vol ii p 158

[2] Harrison J H *Surg Gynec Obstet* March 1941 p 622

[3] Powers J H and Smith D W *N Y St J Med* 1932 32 1191

[4] *Tubercle* February 1941 p 33

[5] Lovell R and White E G *Brit J Tuberc* January 1941, p 28

Griffith also gave data showing that in human cutaneous tuberculosis the bovine and human types are responsible for infection in equal proportion. He believed that in most, if not all, cases of lupus the tubercle bacilli at the onset are of normal virulence and undergo attenuation during the course of the disease. This diminution of virulence is, however, not uniformly progressive; having acquired new bacterial properties the bacilli seem to remain stable for an indefinite period. Attempts to restore the virulence of some of the attenuated bovine strains by passage in calves, goats, and rabbits were successful in rather less than half the instances. Artificial attenuation on culture media led Griffith to the view that some strains retain mild pathogenic power for long periods, but there are exceptional cases in which strains eventually lose their pathogenic power completely.

HAND-MADE VERSUS MACHINE-MADE PILLS

It seems from an examination of three kinds of pharmacopœial pill, recorded in a paper read at the Edinburgh meeting of the Pharmaceutical Society by D. H. O. Gemmell, that a pill freshly made by the pharmacist is superior to a manufactured pill. The pills investigated were rhubarb, aloes and colocynth, and hyoscyamus, which contain respectively peppermint oil, caraway oil and clove oil. The oil content of three hand made pills of each kind was compared with that of four machine made ones. Hand-made compound rhubarb pills all contained 2.32% of peppermint oil, while machine-made ranged from 0.19 to 0.97%; hand made pill of aloes varied from 2.5 to 2.8% of caraway oil, machine-made from 0.22 to 1.80%; hand made pill of colocynth and hyoscyamus varied from 4.19 to 4.40% of clove oil, machine made from 0.63 to 3.41%. Each sample of machine made pills examined consisted of 2 coated and 2 uncoated pills and the percentage of oil was always higher in the uncoated than in the coated pills. Mr. Gemmell suggested that the low figures recorded for the manufactured pills may be accounted for by the volatilisation of the oil during processing and that the reason why the coated pills have a lower oil content than the uncoated is no doubt because of the heat process in sugar coating. Which just goes to show that mechanisation falls down in the long run; it still takes a man to roll a pretty pill.

HEALING OF TENDONS

On few subjects in surgery has there been such diversity of opinion as on the treatment of injuries to tendons. As in the treatment of fractures controversy centres around the advantages of immobilisation to effect repair and mobilisation to restore function, and rational treatment must reconcile the two principles. Mason and Allen[1] have now made a thorough experimental study of the healing of tendons which should banish a great deal of loose thinking. In over 100 experiments on dogs, flexor and extensor tendons were sutured and later examined histologically for strength of union and degree of irritative reaction and also tested for tensile strength after various procedures, including complete immobilisation, immobilisation followed by unrestricted activity, and immobilisation followed by guarded activity. The tensile strength of the union was found to conform to three phases observed histologically. In the first phase of exudation and fibrous union there is for five days a rapid diminution in strength; in the second phase of fibroplasia there is a gradual rise in strength until about the 16th day, and in the third long phase of organising differentiation there is a still more gradual rise in tensile strength which continues until the suture line finally resembles normal tendon. During the first and second phases of repair movement increases the irritative reaction in the tendon and leads to separation at the suture line, and even after three weeks of immobilisation unrestricted activity has a similar effect. Restricted use of the tendon, allowing a moderate range of active movement but no undue elongation, begun on the 14th day and continued for one or two weeks, produces a rapid rise in tensile strength with only a slightly greater local reaction. It is evident from this work that early mobilisation of sutured tendons, far from preventing reaction and adhesions actually leads to their increase, without at the same time helping the return of tensile strength, but that after the first fortnight movement aids healing.

TUMOURS AND PROTOZOA

Some work done by Mottram[1] on paramecia promises further insight into the mechanism of malignant change in the vertebrates, for long exposure of these protozoa to carcinogenic hydrocarbons such as 3:4 benzpyrene produced abnormal cells greatly resembling those found in tumours. The cells showed wide morphological variation which was reproduced by cell division long after the hydrocarbon had been removed. Subsequent work[2] now shows that such abnormal cells—giants, dwarfs and multiple cells—can also be produced under the influence of other blastogenic agents such as gamma and ultraviolet radiations or extremes of temperature. The relation between the behaviour of the protozoa and of animal cells now seems still closer, for the later experiments suggest that a virus may be playing a part. Abnormal cells containing inclusion bodies have been found in a culture of aspidisca which had been subjected to a temperature of 40° C. for a minute six days before examination, and the staining reactions indicated that the inclusions were of nuclear material. Other cells in the culture showed viscosity changes similar to those which precede the formation of abnormals by blastogenic agents. Direct infection of healthy cells by the virus has not however been accomplished. That a definite alteration in the metabolism of the infected cells has been brought about seems evident from the abnormal staining seen, for the inclusions appear to have amassed nucleic acid at the expense of the cell nuclei. Whether a virus already present in the cultures is being stimulated by the abnormal environment, or whether a virus is actually being produced by the treatment is not clear.

SPECIAL RATIONS

The Food Rationing (Special Diets) Advisory Committee of the Medical Research Council has lately made two recommendations to the Ministry of Food, one dealing with special rations of fresh liver for the treatment of pernicious anæmia, and the other with cases of alleged sensitivity to margarine. The committee advised that fresh liver is only necessary for the rare patients in whom parenteral injection of liver extract causes anaphylactic shock, and the ministry will grant special rations to such cases if authentic. Application, with full medical evidence, should be sent to Prof. J. C. Drummond, Ministry of Food, Neville House, Page Street, S.W.1. The ministry has received many applications for special rations of butter from people who say they are sensitive to margarine. In the advisory committee's opinion, however, true sensitivity to margarine, if it exists, must be very rare. Cases where medical data suggest the possibility will be tested on application to Professor Drummond.

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[1] Mason, M. L. and Allen, H. S. *Ann. Surg.* March, 1941, p. 424.

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[1] Mottram, J. C. *Nature, Lond.* 1940, **145**, 184.
[2] *Ibid.* April 19, 1941, p. 479.

Special Articles

POSTWAR HOSPITAL SERVICES

By Alistair Hunter, M.B. Camb., M.R.C.P.
K. M. A. Perry, M.D. Camb., M.R.C.P.
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Medicine at the moment enjoys a privileged position in its relative independence and freedom from state interference but if this is to continue it must offer in return a service which will keep pace with and even contribute to the changing ideas of social progress. Of recent years, it seems to us medicine has been open to the charge of furthering its own interests rather than the needs of the community. It is not surprising that the call for reform has been heard increasingly. Sometimes the profession itself has protested against some of its worst features, often individual doctors have clamoured for a change in their lot, and of late politicians have discovered in this situation a likely manœuvre which might serve them well in some future election. This last factor warns us of the danger of some change being forced on medicine by those who have little knowledge of its needs and no respect for the best of its traditions. is clear that reform must come from within and must ve the support of a large part of the profession itself. Two things concern us: first and most important, the eal of service to the community both in sickness and health; second, the welfare of those who work to rve the patients—doctors, nurses, lay administrators, moners and the rest—since unless these are considered e primary consideration will be nullified.

For the first, medicine must have its four main nctions of healing, prevention, teaching and research tablished and coordinated so that the greatest benefits ay be obtained from each. Such a service must bviously affect much of our social and economic life if e prevention of illness is to be fostered, if the acutely l are to be cared for, and if a place is to be found for the ronic sick and their absorption into a useful life in e community achieved. In the interests of health, edicine should act as a powerful adviser to the state, nabling the results of its researches to be carried into ractice. In return, the individual doctor is entitled to fair standard of living with leisure to develop his ultural interests and with a freedom of thought and ction that will enable him to continue his work ndisturbed by narrower political restrictions.

If all the various activities of medicine are to be oördinated there must be a single central body concerned with broad questions of policy and armed with ltimate executive power. The precise nature of this ody is outside the scope of this article, but a corporation n the lines of the B.B.C. appears to be the ideal. It ust be fully representative of all professional activities nd have easy access to the legislature. Although t will have full executive powers it will presumably elegate these to regional bodies whose task will be to oördinate all medical services within their regions.

REGIONALISATION

The principles of regionalisation adopted in the E.M.S. have such great advantages that they are likely o form the basis for any future scheme. The present scheme is far from perfect, for central control is limited, and the independent financial powers of the various local bodies enable them to obstruct cooperation in the pursuit of their own aims. We hold strongly that finance should be regionally controlled and that professional administrators should take the place of local bodies who are often ill-equipped to understand hospital needs. The geographical location of these regions is not discussed here, both because it has been fully treated in earlier articles, notably those of The Lancet Special Commissioner (Dr. Stephen Taylor) and Sir Farquhar Buzzard, and also because the present situation with increasing air-raid activity makes the position of our towns and hospitals hard to foretell. It seems reasonable to expect that in the interests of economy and also of cherished local traditions use will be made of existing hospitals at first and often permanently, but the chance to rebuild is unique.

Each hospital region will be under the control of an administrative body responsible to the central authority. This body will coordinate hospital activity with other services such as public health, and will also coordinate the relations between the individual hospitals of each region. In these interests it may insist on a certain standard of uniformity of administration and practice, but beyond this individual hospitals will be encouraged to solve their own special problems for themselves. The regional hospitals will be graded according to their size and facilities for treating the sick and will be based on a key hospital. This will always be a general hospital equipped with staff of the highest standard, and usually a recognised teaching hospital. Other hospitals will be graded from this. All the hospitals in a region will be interdependent, and transfer of patients from one to another will be easy and arranged by the regional office who will provide suitable transport, which will be less difficult in peace than in war. Special hospitals will also be provided for mental patients, cases of tuberculosis and other infectious diseases, and the chronic sick. The problem presented by this last group has long awaited proper solution, and must include the provision both of hospitals and rehabilitation centres and perhaps even clinics on the lines of Papworth if these people are to be enabled to live the most useful life open to them. Certain specialised hospitals, such as those for neurology, diseases of the chest and genito-urinary systems, call for discussion. The standard of research and postgraduate teaching which they often attain and their value as a meeting place for many consultants from different hospitals, will justify their retention; but we feel that their work could often form a unit in a general hospital, and it is questionable whether many more should be built.

In addition to inpatient services outpatient clinics must be provided. These will be spread over many hospitals and even form separate clinics throughout the region, but admission to suitable hospitals, except in cases of urgency, will be arranged by the regional authority. The administration of such clinics cannot be considered here, but we do support a system of appointments for patients, and the separate attendance of new and old cases.

MEDICAL STAFFS

The medical staffs of the regional hospitals should almost all be of recognised consultant status, and we feel that they should be paid. Their appointment should be under contract with the central medical body. It seems important that all such appointments should be made on the recommendation of a regional medical council representative of the medical staffs of all the individual hospitals, for such a body would be most competent to estimate the qualifications of candidates. We are opposed to full-time contracts because we feel that with certain exceptions they tend to produce a monotonous and over-regulated service which would encourage mental staleness and inertia instead of the wider and more independent outlook. Part-time contracts would allow a certain amount of private practice, which would give a more varied life to the consultant and benefit the cultural status of the profession. The bulk of the consultant's time, however, up to three-quarters, should be at the service of his hospital work and his terms of contract and remuneration should indicate this. At present the need for making a living under expensive conditions takes up much of the time of the staff, especially at a period in their careers when they could be of greatest value to their hospitals; this also may lead to an attitude of aloofness and we strongly urge the need for closer contact both in social and professional life between all ranks in the profession. Private practice should be allowed in principle for the reason we have stated, although postwar social conditions may limit it; it should be carried out from hospitals where outpatient clinics, with inpatient blocks, and with adequate secretarial and investigation services should be available for private patients. Such a scheme should benefit the profession and public alike. It will help to maintain the standard of the consultant, and with the easier financial conditions men of ability will no longer be deterred from a consultant's career by lack of private means. The public will be able to get service of the highest standard at reasonable fees and will be protected against some of the forms of questionable practice that can be disguised under a West End address

Consultants in a region should primarily be appointed to individual hospitals according to their capacity, but men with special experience of one sort or another should be available for consultant work throughout the whole region in special hospitals or other situations where their experience may be valuable Consultants should from time to time be sent to study the methods and ideas of other countries, and attendance at international conferences should be encouraged and financially supported, this ideal is followed successfully by the Mayo Clinic No consultant posts should involve hospital residence The junior posts up to and sometimes including registrar status will be resident and employed on a whole-time basis for a limited period They will be limited as at present, but we suggest that a maximum period of five years in any hospital below the rank of consultant staff should be stipulated We would recommend better payment for newly qualified house-officers

ADMINISTRATION, NURSING AND TECHNICAL STAFFS

The administration side of the hospitals should be in the hands of whole-time laymen who have had special training for their work and qualified by diploma examination There will be regional administrators, among whom a small medical personnel may be desirable, and individual hospital administrators There should be the possibility of change from post to post, since this will encourage the development of new ideas The post of medical superintendent should be abolished, for either the clinical or the administration side of his work tends to be neglected, and the responsibility is so great that delegation of duty is difficult, in addition, the establishment of such a senior resident post often tends to a cramped outlook which reacts badly on its occupant The harassed officer, overburdened with work for which he is often ill-equipped with knowledge, tends to become a wary political fencer who views each new advance as a potential source of complaints which must be stifled if he is to retain his job The lay administrator should work closely with the medical staff and have under him fully trained specialists, such as stewards, surveyors and technicians, all of whom should be properly qualified and remunerated Secretarial help of a similarly qualified nature should be provided generously, and this will enable proper hospital records to be kept and standardised throughout the regions The hospital almoners provide a specialised welfare service which can be of the greatest value in dealing with the aftercare of patients and the home status of outpatients They should be widely employed and should be fully trained by the Almoners Institute

Nursing staff presents a difficult problem both of training and recruitment, which has become acute If the best type of person is to be attracted to this profession drastic reforms must be instituted At present nurses are often burdened with traditional restrictions which have long been discarded by the community as a whole Excessive hours of work, inadequate remuneration and provision for old age are scarcely compensated by regulated conditions of off duty at present prevailing The recognition of the right of nurses to live their own social lives and to make what use they wish of their off-duty time is in many places long overdue The alterations required may involve a change in the present system of communal life with its suggestion of a monastic novitiate

CONCLUSION

We have suggested a tentative basis for a postwar hospital and consultant service based on general principles * We realise that this is only part of a wider health service which may have important bearings on our whole economic and social structure It is impracticable under war-time conditions to give more detailed proposals We have in mind a state service with central control under a national corporation Hospitals will be grouped geographically in regions and graded according to their special capacity, all hospitals will be coordinated by a regional executive responsible ultimately to the central authority Within this framework individual hospitals should be encouraged to form their own methods of working Medical staffs should be of consultant status and appointed by the central body only after local recommendation, they should have part-time paid contracts except in certain special cases Hospital administration should be in the hands of trained laymen and not of medical superintendents Adequate technical and other services should be provided by properly qualified persons Reforms in nursing conditions seem to be overdue

It is not easy to propose a reform of the profession which will please all sections, and still less easy to carry it through There is no single body sufficiently representative of medicine to do this, and we believe that in the proper time a Royal Commission which can sift all the available evidence should be set up In the meantime constant discussion and inquiry among the profession will prepare them to give a better judgment on the questions at issue when important decisions have to be made

UNITED STATES OF AMERICA

RHEUMATIC FEVER DRIVE

DURING the past few years the incidence of infantile paralysis has decreased in the State of New York and the stream of children seeking orthopædic care at the state reconstruction home at West Haverstraw has slackened Dr Edward S Godfrey, Jun, state commissioner of health, has seized this opportunity to help another group of crippled or potentially crippled children, and 96 beds at the home are to be set aside under the charge of Dr Thistle McKee for the care of children with early rheumatic fever in the subacute and convalescent stage But Dr Godfrey is spreading his net wide and under the direction of Dr David D Rutstein postgraduate courses will be held in clinical aspects of rheumatic disease, case finding studies conducted throughout the state and a preliminary survey made of the possibilities of developing a cardiac service in the state The programme will include investigations into the ætiology, prevention and treatment of rheumatic fever and the evaluation of the various methods of treatment It is also proposed to establish a model cardiac clinic at West Haverstraw where facilities will be available to physicians who wish to obtain special experience in the diagnosis and care of this disease

BUREAU OF PNEUMONIA CONTROL

Dr Henry van Zile Hyde of Syracuse has been appointed head of New York State Bureau of Pneumonia Control in succession to Dr Edward S Rogers, who was recently provisionally appointed assistant commissioner for medical administration in the state department of health Dr Hyde graduated from Johns Hopkins University School of Medicine in 1933 and served his internship in the Johns Hopkins Hospital In 1936 he began the practice of internal medicine in Syracuse and has lately helped in a cooperative hospital study of antipneumococcus serums He has also been clinical instructor in medicine at the college of medicine of Syracuse University

SCOTLAND

MEDICAL MISSIONARY CENTENARY

THE Edinburgh society was founded in 1841 as the Edinburgh Association for Sending Medical Aid to Foreign Countries During its life it has trained over 300 students for work in the mission field Most of these have been British, but there have also been Indians, Arabs, Chinese, Armenians, and Persians Its first medical missionary was sent to Ireland to work among the poor of the Roman Catholic community at the request of the Irish Presbyterian Church Dr John Owen Evans, a London graduate, was the first to go to India Since then many others have been sent to foreign lands Lechmere Taylor, a former superintendent and secretary of the E M M S, spent 32 years in Jalalpur, Dugald Christie founded the Moukden Medical College, Wong Fun, believed to be the first Chinese graduate from a Western University, Henry Fowler worked among the lepers of Central China, John Smith was one of the

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* The scheme we have sketched is by no means complete for a fuller discussion of details see the reviews of THE LANCET Special Commissioner (*Lancet* 1939, 2, 945) and Sir Farquhar Buzzard (*Ibid*,1941 1 155) and recent articles by Mr J B Hunter (*Ibid* 1941 1, 287) and Prof J A Ryle (*Ibid* 1940 1, 158) In addition the Cave and Sankey Commissions in 1931 and 1937 made pertinent recommendations

pioneers in Uganda; P K Vartan an Armenian helped establish the society's hospital in Nazareth and Frank Mackinnon whose monument in the Holy Land is the Victoria Hospital in Damascus. In this country the society through Dr P D Handyside founded the first home medical mission—the Livingstone Medical Mission in the Cowgate Edinburgh. An infant play centre and the Hawthornbrae Convalescent Home for tired women and children are now also run by the mission, and the historic Magdalen Chapel in the Cowgate has been placed in the hands of the society which is undenominational. Although 'meth' and eau-de-cologne drinking is on the upgrade social conditions in the Cowgate have improved enormously since the old days and families, and indeed generations, still look to the mission for help of all kinds from midwifery to dentistry.

BEHAVIOUR OF SOME COMMON FEVERS IN WAR-TIME

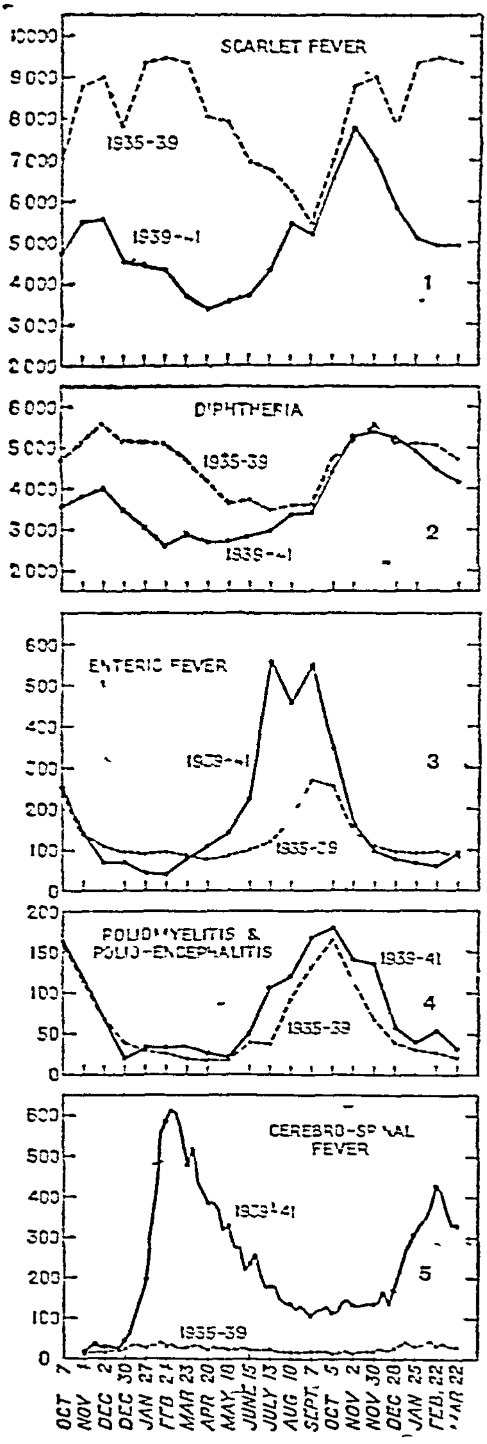
No major influenza epidemic developed in the winter of 1940–41 and with the exception of cerebrospinal fever the course of infectious diseases since the outbreak of war has been a matter for satisfaction. The table below shows the numbers of notifications reported for 5 diseases in 1940 compared with the years preceding the war while the diagrams compare the trend they have followed since September, 1939 up to the third quarter of the present year.

NUMBER OF NOTIFICATIONS IN ENGLAND AND WALES
(From the Registrar General's weekly reports)

—	1935	1936	1937	1938	1939	1940
Scarlet fever	12[illegible]	104 [illegible]	9[illegible]	99 413	[illegible]8 2[illegible]1	6[illegible] 547
Diphtheria	62 494	58 2[illegible]	61 4[illegible]	6[illegible] 7[illegible]	47,710	46 [illegible]
Enteric fever	1 [illegible]81	2 [illegible]	2 145	1 [illegible]	1 [illegible]24	2 [illegible]35
Poliomyelitis and polio-encephalitis	[illegible]	[illegible]	8[illegible]1	1 [illegible]2	836	1 106
Cerebrospinal fever	8[illegible]	1 [illegible]11	1 1[illegible]	1 2[illegible]3	1 [illegible]	12 [illegible]3

Scarlet fever which tends to show a secular swing every few years was falling it will be seen in the pre-war period and this downward trend far from being checked continued to a level substantially below recent previous experience. Its course during 1940 was however, rather unusual (see fig 1). The normal trend as shown by the median figures for 1935–39 is a decline from early spring until the autumn when the customary seasonal rise sets in. In 1940 notifications were very low in the earlier part of the year but began to rise at the beginning of April so that at the time of the normal minimum there was but little difference between the two curves. School closure in the early days of the war and subsequent reopening may well have played a part in this change. At the beginning of the present year notifications were falling steeply and at the latest date shown were again well below the average of 1935–39.

Diphtheria shows a very similar course (fig 2) though its relatively low level in the first half of 1940 gives an annual total well below the experience of 1935–38. In the latter half of 1940 it differed but little from the experience of the previous 5 years. At present it is slightly below normal and it is to be hoped that the extension of inoculation recently advocated so strongly by Sir Wilson Jameson will be sufficiently wide to avoid a return to the unsatisfactory peace-time state of affairs and that a preventable disease may, under the exigencies of war be in fact prevented. The enteric fevers typhoid and paratyphoid were in total somewhat above the level of 1935–39 but in view of some of the conditions of life prevailing the position is reassuring. No serious epidemic of typhoid occurred and the excess of notifications in the summer months was it seems the product of a somewhat widespread incidence of the paratyphoid group. In the latter half of 1940 and beginning of this year incidence has differed little from normal (fig 3). Acute anterior poliomyelitis and polio-encephalitis was in total rather above the normal level in 1940 though less than in the epidemic year 1938. Its seasonal trend (fig 4) with an autumn rise was as usual and at present notifications are few and normal for the time of year. The only black spot is the incidence of cerebrospinal fever which as previous diagrams have shown (*Lancet* 1940, 1, 988) has been far in excess of any previous experience. The year's total for 1940 was nearly 13 000 cases or more than tenfold the normal experience. Much of this excess was concentrated in the early months of the year but even at its minimum in the autumn the weekly figures were, it will be seen far in excess of normal (fig 5). The lowest point in the week ending Sept 7 was 106 notifications compared with some 10–20 in a normal year. Subsequently a slow and uneven rise set in to reach a peak of 430 cases in the week ending Feb 22 one week earlier than the peak of 1940. Incidence has declined slowly since then to 334 cases in the week ending March 22, and 309 in the week ending April 26 so it seems certain that this year's epidemic will be on a rather smaller scale than that of 1940 though still relatively large and widespread.



The notifications of scarlet fever diphtheria enteric fever and poliomyelitis in *4-weekly period* and of cerebrospinal fever *weekly*, between the outbreak of war in September 1939 and March 22 1941 compared with the median values in the same periods in the 5 years 1935–39

THE BLEEDER AND THE LABORATORY

DIFFERENTIATION of the various hæmorrhagic diseases is not always easy Prof L J WITTS, addressing the Halton Medical Society on May 2, ran over the most recent tests, some of which carry latent therapeutic possibilities Following Macfarlane's *recent review* he explained hæmostasis from capillary bleeding as due to two factors the contraction of the capillaries and the subsequent sealing by coagulation In purpura hæmorrhagica capillary contraction is at fault, the bleeding time prolonged and snake venom relatively ineffective In hæmophilia the capillaries contract well and the bleeding time is normal, but when the capillaries relax hæmorrhage recurs *from failure of coagulation*, snake venom is of value in preventing this recurrent bleeding In purpura hæmorrhagica the capillary lesion may appear to be localised, Professor Witts described one case in which epistaxis and another in which menorrhagia was the presenting symptom This localisation is probably never absolute, however, and other symptoms such as skin purpura may be elicited on inquiry though they have been too slight to attract the patient's attention Splenectomy probably exerts a beneficial effect on the capillaries as well as on the platelets Menstruation has a harmful effect on the capillaries, quite apart from menorrhagia, purpuric symptoms are worse at this time and this is at any rate one factor in vicarious menstruation In Professor Witts's experience bleeding rarely ceases immediately after splenectomy, and he has seen it continue for anything from 3 days to 3 weeks after the operation He therefore advised against instant operation in purpura with a short history, in acute cases transfusion is the sheet anchor of treatment

TESTS TO BE APPLIED IN CASES OF HÆMORRHAGIC DISEASE

Capillaries	Venous blood	Quantity required
Platelets	Red cells, white cells, Hb, E S R and hæmatocrit	1 c cm
Differential film	Coagulation (Lee & White)	4 c cm
Bleeding time	Retraction at 24 hours and serum bilirubin	5 c cm
Coagulation (Dale & Laidlaw)	Fibrinogen, Howell, Quick, venom alone, venom + lecithin	5 c cm
Tourniquet test		
Peck test		15 c cm

The tests (see table) he is now using in the investigation of hæmorrhagic diseases can all be applied to the patient at one sitting The inclusion of a differential white count is a reminder of the importance of leukæmia as a cause of purpura We should be chary of diagnosing an idiopathic purpura hæmorrhagica after middle life, neoplasm, or drugs such as Sedormid, should then be suspected as possible causes The time of bleeding from a needle puncture is a valuable indication of the hæmorrhagic tendency A bleeding time above 10 min implies a hæmorrhagic tendency and makes it fairly certain that the patient will give trouble if any operation is carried out Unfortunately there is a considerable overlap *between the normal and the abnormal*, and in doubtful cases, as suggested by Ivy, it might be useful to apply a tourniquet at 40 mm Hg and carry out the needle puncture below this

The Dale and Laidlaw test, and similar tests of capillary-blood coagulation, have the theoretical advantage that there is something like the normal sequence of events—the blood streaming over the injured tissues In practice they give misleadingly optimistic results in hæmophilia and during heparin treatment The diagnosis of hæmophilia is often called in doubt when there is *no family history of the disease* This is not uncommon because the hæmophiliac woman transmits the tendency to only half her sons and half her daughters, so that it may skip several generations In such cases confusion may be made worse by indecisive results from capillary blood coagulation tests, *it is then essential to examine* venous blood

The mechanical resistance of the capillaries is tested by placing the sphygmomanometer cuff round the arm at 80 mm Hg for 5 min and noting the number of petechiæ in a circle 2 5 cm in diameter (the dimensions of a half penny) placed 4 cm below the bend of the elbow Up to 7–10 tiny petechiæ are normal, but the test has little diagnostic value It was originally devised *as a test for scarlatina* and may be positive in people with no other sign of hæmorrhagic tendency and negative in frank thrombocytopenia Many attempts have been made to improve the estimation of the capillary resistance—such as Gothlin's modification of the tourniquet test, and the suction test There are physiological variations in capillary resistance in different parts of the body, and moreover the capillaries are affected by exposure to sun and wind, by the menstrual cycle, by previous distension and by the occurrence of purpura or bleeding The suction test has been widely used as a measure of the scorbutic tendency or of vitamin-C reserves, but the results are so flatly contradictory that some of the observers must have been ignorant of the fallacies inherent in the method Crandon showed no increase in capillary fragility in spite of the development of manifest scurvy on an experimental diet lacking in vitamin C, and Scarborough demonstrated that the capillary fragility in malnourished patients can be repaired by vitamin P but not by vitamin C There is little correlation between the large subcutaneous hæmorrhages of scurvy and the fragility of the capillaries of the skin Some of the confusion may have been caused by the use of natural sources of vitamin C which also contain vitamin P, but in any event vitamin P is not known to have any real therapeutic value In the Peck test the resistance of the capillaries to the toxic *action of snake venom is measured* This test often confirms the presence of a hæmorrhagic tendency, but the standards are ill-defined and there is great overlap with the normal

In studying the coagulation of venous blood and retraction of the clot, it must be remembered that coagulation is only a potential quality of the blood, and does not occur until the blood is exposed to abnormal conditions As Nygaard has emphasised, these tests are affected not only by intrinsic hæmatological factors but also by extrinsic factors such as cleanliness, quality and size of glassware and the like The normal coagulation time (Lee and White) appears to be about 6½ min, with a range of 3½–10 min Clot retraction is often deficient in purpura hæmorrhagica, but this finding is not diagnostic since retraction is occasionally absent in normal men The fibrinogen content of the blood is of no practical importance in the hæmorrhagic diseases, 10% of the normal amount is sufficient for clot formation in the ordinary way, and the level in the hæmorrhagic diseases never sinks below that Congenital fibrinopenia is excessively rare and will probably be shown up by the *low sedimentation-rate* Nor is *calcium* of any practical importance because the critical value for blood coagulation is lower than that necessary for survival

Much information has been gained recently by the study of oxalated or citrated plasma, such plasma will clot if recalcified, and this is a more elegant way of measuring coagulation than by using whole blood Clotting can be accelerated by the addition of tissue extracts such as emulsion of brain, and such accelerated clotting tests (Quick) are believed to give some indication of the amount of prothrombin in the plasma Lack of prothrombin is the cause of bleeding in jaundice and in melæna neonatorum, and it can sometimes be corrected by the administration of vitamin K. Tissue extract or *thromboplastin* appears to consist of a water-soluble, heat-labile protein and a fat-soluble, heat-stable lipoid The separate effect of the two factors can be simulated and studied by the use *of snake venom* (water-soluble fraction) and lecithin (fat-soluble fraction) Such studies suggest that hæmophilia is associated with shortage of the water-soluble factor and *purpura hæmorrhagica* with shortage of the fat-soluble factor Nevertheless other interpretations can be placed on the facts, such as the sence of interfering factors in the plasma The dies are of interest because they enlarge our diagnostic ers and also because they reveal a humoral defect in pura hæmorrhagica, hæmatologists have always pected that a single lesion may underlie the platelet iciency and the capillary disorder

Professor Watts ended by expressing the hope that on h lines effective medical treatments may be found for se disabling diseases

In England Now

Running Commentary by Peripatetic Correspondents

LISTS of successful candidates for the various post-duate degrees make those of us who have been swept in the machine of military medicine take stock of perience gained at the cost of nearly two years of civil dicine, and look—not without a little anxiety—to our ure prospects Have we gained on the swings what lost on the roundabouts, or are we taking a slow but ppery course downwards from the eminence reached er seven years of hard work and hard play as medical idents and housemen ?

For my part and I have been lucky, I make the lance about all square, and after managing the wine-oks of a mess for nine months one should be able to lance anything The first winter was rough, but I ed it, lath and plaster were not made to resist the ld of three months of snow and wind "Bundling"* is the official method of bedding out several thousand ung men but in most cases, during the cold weather, e bundling board disappeared in favour of three in a d for extra warmth Body-musters of batches of men, th the sick-bay thermometer registering 22 degrees of ost, are not pleasant for either party, yet few seemed suffer any ill effects To hear the chief petty officer toning, in broad Lancashire, his instructions to each ass to drop their pants to their ankles and raise their nds above their heads on seeing the medical officer as a daily tonic, accentuated on the day when the first otsman to arrive in his native dress non-plussed our iend, and solved the problem of what a true Scot wears der a kilt Then there was the man who joined up in bowler hat Other impressions that stick are the fine ysique of the early lot who volunteered mostly embers of the R N V R before the outbreak of war, e high standard of health throughout the following ousands, although the mark of the coalmines or of some f our great northern industrial areas had been left delibly on many, and the great improvement in general ell-being a mere five weeks of good food, plenty of ercise and no mental worries can bring about Every ne of these men put on weight—many over a stone in ve weeks Surely no harm could come of a spell of this pe of life for every boy leaving school in the future ays of peace ?

Medical experience was rather limited, but vaccination roved an unexpected stumbling-block, producing some erce and slow-healing ulcers with an incidence of about % of fever, headache and malaise on the twelfth day, ne case had a lobster-like rash It was good to see the iraculous improvement in the prognosis of meningo-occal meningitis In our small series of cases all ecovered, and the gratitude of relations during a trying hree months was heartening A well-to-do parent whose on had survived but had been left with a fleeting acial paralysis, was the only one who showed us any ntagonism It was interesting to get five peptic ulcer erforations, and was it just coincidence that they oincided with increased number and severity of air-aids ? Summer brought glorious days under canvas, nursing the sick in bell tents, helping to wield that powerful word "requisition," delving into water tanks, septic tanks, drainage tanks, electric power and all modern conveniences, and eating salmon produced by one of the sick-berth staff without going too carefully into its origin

Now at sea I have almost lost touch with medicine Reading without colleagues with whom to discuss the subject becomes dry and sterile. A fighting ship cannot afford to carry sick passengers for longer than necessary, and the complete absence of a chance to follow up cases is annoying and strange But there are things on the credit side knowledge of shipmates gained from living close to them for six months or more without sight of a village or a tree and glimpses of bird life hundreds of miles from anywhere, snow-bunting landing on the foc'sle skeins of geese and even swans migrating, the chance to learn that "kittiwake" is neither the name of a North American tribe nor a gambling term, and that a fulmar is not just another aircraft All the romance of the sea of shipping and commerce can be savoured in the meeting of a convoy somewhere at sea, in escorting it for days through dangerous waters, or in passing a lone ship heavily laden and homeward bound

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Last Saturday night's fire at St Stephen's was annoying but in no way comparable to the fire of Oct 16, 1834, when the old Palace of Westminster was burned out completely with the exception of St Stephen's hall Fire had previously played a part in the life of the House of Commons for it was after the fire of 1512 that the palace ceased to be used as a royal residence and the commoners met in St Stephen's chapel for the next three centuries—those who could stay the course The vast new palace which rose on the cinders between 1840 and 1867 was like York Minster built of Magnesian limestone which catches the rosy tint of the setting sun and sometimes glows of itself like a Dutch holy babe But so perishable is the stone in the acid fumes and soot of a great city that much of the elaborate carving fell away and was taken by members for their rockeries The ill-natured bomb will have solved the vexed question of ventilation in the debating hall which members have always used as an excuse for cold feet and hot heads At first air was pumped into the chamber from an intake at the top of the Victoria Tower where it was presumed to be clean and the vitiated air was extracted through apertures in the ceiling—a combination of feeble plenum and heat exhaust which was both inefficient and noisy In 1851 the system was reversed both Victoria and clock towers being used as upcast shafts with a furnace at the foot of each The incoming air was warmed, filtered and humidified and engineers came from far to see this paragon of ventilation Nevertheless the ladies' gallery complained of the smell of horse manure drawn in from the court and members on the floor of the house were reminded exasperatingly that their less conscientious fellows were smoking tobacco outside This led to a new installation of the plenum system which left the air stagnant in some parts of the house and draughty in others And finally the National Physical Laboratory was called in to ascertain on a model how a gentle circulation of air over members' faces could be achieved without the sensation of draught They hardly expected this Hitler-sent opportunity of starting from scratch

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A week or so ago the *Times* gave space to several letters objecting to the use of the word "contact" in broadcasts and elsewhere as a transitive verb meaning "to get in touch with" The word owes its popularity in some measure to its aeronautical and electrical associations and to some extent supplies a want, and it may be asked when have these purists of Pall Mall, these letter-writers from country houses ever been known to supply us in our hour of verbal need ? For we are badly in need of some new words To take an elementary instance, people often have to refer to some connexion like a brother-in-law's brother Why not "bilber" ? Similarly "bilser," "sil," and "mil" Of course mil and sil have other meanings but the context will generally make it clear that one is discussing an in-law, not a millilitre or a yellowish pigment used by ancient painters For our more immediate needs we should have more words of the "boycott" type, words that are like one-act plays and tell a whole story something for the grey squirrelling of the Japanese, the young cuckooing of the Germans in puppet states, the ichneumon methods of their embassies and legations We need a word to describe the defence mechanism which makes a family or nation draw together in times of disaster and its opposite when they quarrel and become strangers to each other in prosperity, possibly by a dispersal mechanism There is a story from the Boer War of an old colonel at the Staff

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* Under 'Bundle' the O E D says ' To sleep in one s clothes on the same bed or couch with (as once was customary with persons of opposite sexes in Wales and New England) 1781 "—Ed L

College who grunted to another "I wish this damned war were finished and we could get back to some real soldiering." We get the same thing in medicine—"To blazes with this preventing and curing business, let's get down to some respectable medicine." We want one word for the side-tracker, the man who is happily lost in detail. A psychologist once said that if a person were suspected of being something not respectable like a thief or a homosexualist, and were called one, then if he were not he laughed, if he were he was indignant in his denials. We want one word for this overacting refutation, of which, of course, there is a splendid Biblical example. One would like to commend these needs to the *Times* letter-writers, hinting that there are a lot of monosyllables that as yet have no meaning attached to them—dunt, gosk and munt are my fancies. I should also like to suggest a word for the armchair critic—how rarely a woman!—whose mental activity demands some work and finds it in criticising others, but whose bodily activity is nil. How about a quoyster? L. *queri*, to complain; adj. querulous, or possibly quey, Scot., a cow that has not yet had a calf; and oyster, a notoriously sedentary bivalve.

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When I was a clerk to Dr. Geoffrey Evans I often had the privilege of hearing his views on constipation. It was with much pleasure therefore that I recognised, in his letter in THE LANCET of April 26, a well-known phrase "The objective is the evacuation of a soft formed stool with a sense of completion." The war has taught Dr. Evans economy of words, for in the old days that phrase was altogether more grandiose. So deep an impression did it make on my youthful mind that I set it to music, or, to be more accurate, adapted it to the chant commonly used for the 104th psalm.

1 The objective to be achieved* is stated in terms | of a | form-ed | stool. Pre- | e for | a bly | soft.
2 Which shall be evacuated with a sense | of com | pletion. and without wind or abdom | in al | dis com | fort.

* * *

Jim and Ern don't take a lot of interest in international politics. They are more concerned, as they have been for the past three or four decades, with tilling the land. Jim is the horseman and Ern drives the tractor. Jim and his horse Victor are on terms of great intimacy and discuss all matters of common interest. "Whaur shall us go nixt, Victor ol' man? 'Adn't us better go down to the barn and pick up they bags o' tetties? You knaws the way to the barn so well as I do, doanee Victor, my buck? An' when us gits there I wants for you to back the cart right een under so's I shan't have so far to lift they ol' sacks, 'cos they'm 'eavy. You knaws all 'bout it, doanee my dear? Wull, come awn theyn!" No less than Jim to his Victor is Ern, a man of few words, attached to his tractor. I'm pretty sure I saw him patting it one day when it was jibbing a bit and he is reputed to take the starting-handle to bed with him ostensibly for safety but probably for company. For the whole of one glorious spring morning I was privileged to ride the drill behind Ern and his tractor. From time to time we had to stop to refill with oats, working silently together as a good team should. Halfway through the morning Ern took a breather lasting perhaps a minute and a half. "I yur they Jerries was auver Plymouth agin las' night," he said, and resumed his seat on the tractor. That was the sole comment on the war that I heard him make in a whole week.

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One good thing can be said of war. It makes a break in the monotonous lives of the many. It releases from backwaters those who long to taste the joy of movement and change—change not only to new work but also to new faces. In the great reshuffle at the beginning of this war, we were lucky in that one of the members of our small community kept us amused throughout the dull days of winter. He looked a jovial old boy, red in the face, stout and genial, but we were soon to learn that our first impressions were too favourable. He was not so genial. We suspected that all was not going to be well when he kicked out at a ward locker that had been so careless as to get in his way. Some devilish "force from behind" made his tongue wag freely. Like the Ancient Mariner, he would buttonhole the unsuspecting and time had to stand still while he gave every detail of his unique experience. He walked with short hurried steps and body held slightly forward. Sometimes he would pirouette a bit, for dancing was his hobby. To him the latest advance in medicine was as nothing to the latest reverse in dancing. When the band played he was the first to take the floor lest his talent passed unnoticed. Conversation with him was no conversation but a monologue. He had seen a rare case like yours. (A silence.) He had seen two cases. (Still a silence.) "Yes, I remember three or four cases just like it." Even if his claims were shown to be false he would not feel hurt. Nor would he be offended if you left him suddenly in the middle of the anecdote you had heard so often. His wife was his only friend and we wondered how she stood up to his flood of words. The answer was simple—she ruled the home. "Now my wife says . . ." Voltaire said that speech was given to man to conceal thought. Our colleague concealed nothing. Or did he? Perhaps speech was given him to conceal him from himself. Did the noise of that drumming, tumbling cataract of words drown for him a still small voice whispering of self doubt and insecurity?

Public Health

Is School Medicine Decadent?

RETIREMENT often tinges a forceful mind with melancholy and Dr. Dunstan Brewer is, in his own words, profoundly pessimistic of the future of school medicine.[1] He begins with an outline of the history of the service, the limitations of which are often overlooked by its critics. Paid for by educational funds, and designed rather to prevent waste of those funds in teaching children too defective or ill-nourished to derive benefit from education, it remains as its name implies a partial service, hedged about by arbitrary boundaries. Whereas the outstanding problem was, and still is, nutrition. Dr. Brewer goes on to discuss variation in children, pointing out that variation is not disease but may lead to disease unless environment is varied to suit it. He warns us against the frequent presumption that variation which simulates disease may lead to the disease simulated—the presumption, for example, that those with low resistance to the passage of albumin are more liable than others to develop Bright's disease, or that those with cardiac murmurs are specially prone to have their hearts damaged by rheumatism. In support of this thesis, he contends, there is not the smallest atom of evidence. He lingers over variations because he believes that in their study lies the real future of school medicine. Until our knowledge of variation is accurate and extensive, medicine he thinks must remain in a state of paralysis. Thus far Dr. Brewer gives us, as often before, views of familiar things seen from previously untried angles, a treatment always refreshing. But the rest of his article is frankly a jeremiad, for he sees no sign of hope that school medicine will emerge from the lowly position it has occupied in the past. It calls for physicians of wide experience and uncommon erudition, who can follow modern research and apply its discoveries, but it cannot command such people because it counts as an inferior branch of medicine or, worse still, as a stepping stone to something else. He states that the service reached its highest point at the conference of the Royal Sanitary Institute in 1935, after which it became more and more subjected to medical specialism, and the school doctor sank to be the servant instead of the master of the specialists designed to help him. He seems to forget that between 1935 and the outbreak of war the school medical service, despite its legal limitations, was constantly expanding. Close attention to nutrition, steady growth in the number and quality of school meals, the milk-in-schools scheme, increase of open-air and nursery schools and nursery classes, special developments in the prevention of rheumatism, of ear disease and deafness, and of defective vision and the encouragement of child guidance clinics—all these are evidence of vitality. On the scientific side this period saw the reports of the Milk Nutrition Committee on the value to school-children of supplementary milk, of the Medical Research Council on epidemics in schools, of the committee on the problems of children with defective hearing, and on the average height and weight of the London elementary school-child And that is by no means the whole story Dr Brewer may be right in saying that school medicine will never fulfil its potential until it is respected as it deserves to be, it will not be respected until those who practise it are fully competent, and it will not attract the fully competent until it is respected But is it not truer to say that no branch of medicine can in this imperfect world ever fulfil its potential? M H Gordon tells us that the mainspring of progress is not respect but independence of thought translated into experimental action

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[1] *J. R. sanit. Inst.* 1941, 61, 99.

From the Annual Reports

CROYDON

Dr Holden s report is in typescript, so its circulation will be restricted In common with those reports of 1939 which were composed after the receipt of the Ministry of Health's circular in July, 1939, that for Croydon is confined to figures and rates, for there was no local incident in the year calling for detailed commentary All the reports for 1940 will be similarly curtailed so they will have little interest to our profession When peace is restored we hope that local medical officers of health will issue reports covering the statistical matter of the whole period of the war, for these would be of considerable value in deciding some questions of the incidence of disease and the evaluation of medical treatment

The population of Croydon in 1939 was 213,000, its birth-rate 14, death-rate 11 maternal mortality 1 2 and infantile mortality 38 The last is the lowest recorded in the town In Croydon the English system of midwifery has been developed to its full potential and this is rewarded by a persistently low maternal mortality Postmaternity morbidity is also low but in this it is difficult to compare Croydon with other units because Croydon is one of the few places where information on this point is recorded

A classification of deaths in the past six years brings it several points of interest, such as the fall in mortlity from appendicitis and puerperal fever and the lack fall in tuberculosis other than pulmonary, the main ement in which is meningitis The deaths from enteric ver for the six years were 1, 0, 4 35 12, 2—a total 54 out of a death roll of 15,107 The epidemic of phoid in 1937 caused a sensation, but it will be seen om these figures that its influence on the life table of e town was really very slight During the same eriod diphtheria caused 91 deaths but because these e spread evenly they cause no popular concern Typhoid this country occurs almost entirely in local outbreaks hich die out as quickly as they arise From theoretical onsiderations we should expect an epidemic of typhoid be followed by several years of high prevalence of the isease, due to the legacy of new carriers, but this is not so

Of 219 cases of appendicitis admitted to the municipal ospital, 195 were cured, 4 died, 19 were relieved and 1 nrelieved This is one disease in which during the resent century we have made sensational improvements n treatment but none at all in prevention There are ew data available of the incidence of appendicitis, but he reports of the Scottish Insurance Commission show hat the disease is especially prevalent in unmarried vomen

IPSWICH

The report of Dr J W Hunter, though not so severely urtailed as many of those of 1939, lacks the epidemiological notes which make the records of that town of outstanding importance in public-health history Ipswich was, and to some extent still is, one of the few self-contained towns in England, and its three medical officers, Elliston, Pringle and Hunter, recognised the unusual opportunity it offered for studying the vagaries of epidemic diseases Its population today is the same as that of Hornsey but its area is 8629 acres against Hornsey's 2872 In both towns females are more numerous than males, and in 1939 more of the former than of the latter died The death tables of the two towns show the natural higher longevity of females Taking our span to be three score years and ten, and therefore deaths over 65 to be "natural," in the two towns 295 males and 271 females died between 65 and 75 years of age whereas 275 males and 138 females outlived their 75th year

The records of Ipswich go back to 1841 so from them we can study the course of the more important diseases for a full century This is of great interest in connexion with the alleged mortality from cancer In 1841–50 the recorded mortality was 0 08 for males and 0 32 for females In 1891–1900 this had risen to 0 63 for males and 0 90 for females In 1935 for the first time the male rate exceeded the female, the rates for that year being 1 86 and 1 76 respectively The most rapid increase was between 1860 and 1870, and throughout it has been much greater in males than in females This suggests that the alleged increase in cancer in the past century can be attributed largely to improvement in diagnosis In 1841–50 the death-rate per million from pulmonary tuberculosis was 3572 and in 1921–30 it was 837, that from other tuberculosis being 359 and 168 respectively The much greater fall in pulmonary than in non-pulmonary tuberculosis may in fact be attributed to better diagnosis, for whereas the alleged mortality from the former fell between 1841 and 1890 from 3572 to 2062 that from the latter rose from 359 to 618

LEICESTERSHIRE

From Dr Fairer's report we learn that the population per acre of Leicestershire is 2 5 persons in the urban districts 0 3 in the rural districts and 0 55 in the whole administrative county, which corresponds to the geographical county excluding the city of Leicester The density of England and Wales is just over one person per acre The house density in Leicestershire is 4 3 persons per house The general death-rate is slightly higher in the rural than in the urban districts and has been so for some years but when the death-table is dissected it is easy to see that this is due to the age-distribution The zymotic death-rate in the rural districts during the past two years has been half that of the urban districts and the phthisis mortality three-quarters Of 815 calls for medical help by the country midwives 252 were for ruptured perineum This complication of labour has apparently been increasing everywhere for several years, but it is not clear whether the increase is real or due to greater attention given to minor tears The midwives called in medical aid in 36% of their cases This rate has been rising greatly all over the country and its rise has caused much concern to county and borough treasurers, but from our point of view it is a healthy sign, for it does not indicate increase in the complications of delivery but increasing recognition by midwives of the limits of their responsibility

Infectious Disease in England and Wales

WEEK ENDED MAY 3

Notifications—The following cases of infectious disease were notified during the week smallpox, 0, scarlet fever 1059, whooping-cough, 1088, diphtheria 931 enteric fever, 50, measles (excluding rubella), 11,004 pneumonia (primary or influenzal) 908, puerperal pyrexia 128, cerebrospinal fever, 326, poliomyelitis, 8 polio-encephalitis 1 encephalitis lethargica 4, dysentery, 103 ophthalmia neonatorum, 89 No case of cholera, plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospitals of the London County Council on May 2 was 1744 including scarlet fever 229 diphtheria 338 measles 336, whooping cough 369 enteritis 21 chicken pox 81 erysipelas 56 mumps 9 poliomyelitis 1 dysentery 29 cerebrospinal fever 62 puerperal sepsis 7, enteric fevers 11 german measles 19, encephalitis lethargica 1, malaria 1, other diseases (non infectious), 64, not yet diagnosed, 110

Deaths—In 126 great towns there was no death from smallpox or enteric fever, 1 (0) from scarlet fever, 22 (2) from whooping-cough, 10 (3) from measles, 25 (3) from diphtheria, 36 (5) from diarrhœa and enteritis under 2 years, and 34 (3) from influenza The figures in parentheses are those for London itself

Birmingham reported 3 fatal cases of diphtheria There were 3 deaths from whooping cough at Liverpool and 3 at Birmingham in the same week Glasgow reported 7

The number of stillbirths notified during the week was 226 (corresponding to a rate of 42 per thousand total births), including 19 in London

Letters to the Editor

BONE-GRAFTING THE SCAPHOID

SIR,—I was much interested in Squadron Leader Armstrong's article in your issue of April 26, and your annotation on it For several years I have made a special study of carpal injuries and especially the fractured scaphoid (see *Lancet*, 1933, 2, 1264, Cyclopedia of Medicine, Surgery and Specialties, Philadelphia, 1939) Though 224 fractured scaphoids, out of a total of 270 carpal injuries, formed the basis of my Hunterian lecture in 1936, I was, and still am, so uncertain of the exact rôle and the results of grafting that I have withheld publication of this lecture until time has permitted a more comprehensive evaluation of the remote results Here is a summary of the views which I formed in 1933 and 1936 and to most of which I still adhere

1 That some 80–90% of fractures treated immediately after the accident unite if the wrist is adequately immobilised for six to ten weeks

2 That many "neglected recent" fractures—i e, fractures of over 6–8 weeks duration—should be drilled, grafted or both I am convinced that in this group grafting does hasten union and is therefore sometimes justifiable for economic reasons, in both peace and war

3 That old fractures form two main groups—those without arthritis, and those with arthritis in the wrist joint In the latter group the problem is one of treatment for the arthritis and there is nothing to be gained by attempting to secure union of the scaphoid

The real problem arises in those cases in which arthritis is not yet present If the fracture remains ununited osteoarthritis of the wrist is inevitable, and the speed at which it develops depends on the strain to which the wrist is repeatedly subjected For this reason, and to relieve symptoms, it seems desirable to obtain bony union, even though non-union is often consistent for a time with very fair function In a certain number—small in my series—bony union can be achieved by adequate immobilisation of the wrist, especially in those fractures in which there is an appearance of cavitation in each fragment at the line of fracture In the majority, however, immobilisation alone failed, and it is in this group that the effectiveness of grafting (*a*) to secure union and (*b*) to prevent osteoarthritis, should be judged With improvements in technique such as Squadron Leader Armstrong describes a high percentage of bony union can probably be obtained Time will show how the wrist after a grafting of the scaphoid stands the strain of heavy work

There is no doubt that the precarious and variable blood-supply of the scaphoid is one of the factors concerned in determining non-union This fact, quoted in modern fracture textbooks, has been known ever since the early anatomical studies of Lexer, Preiser, and others—work which was admirably illuminated by Schnek (1930, 1933) and by Logroscino and de Marchi (1938)

Your annotation is not correct when it says that "there is nothing to be gained by either fixation or reconstruction" when the proximal fragment has undergone avascular necrosis If the wrist is kept adequately immobilised complete revascularisation and bony union will occur in a considerable number of patients And I cannot agree with your advocacy of excision of one or both fragments, either to relieve symptoms or to forestall subsequent arthritis I was able to review a number of patients on whom this operation had been performed many years earlier and this is the conclusion I reached "The results of excision of the scaphoid have been disappointing on the whole The functional result does not appear to be materially influenced by the extent of the excision—i e, by removal of the bone in part or in whole, or with the semilunar in addition Occasionally beneficial results have been seen when the operation has been performed in young patients and in the absence of arthritic changes But it is under precisely similar conditions that refreshing and bone-grafting operations hold out the promise of greater success and without mutilation"

One final point concerns the site for the selection of the graft Though a graft of the tibial cortex forms an excellent internal splint, union is perhaps more rapidly promoted by using a graft containing more cancellous bone such as can be cut easily from the lower ends of the radius or ulna, or from the olecranon

Manchester H OSMOND CLARKE

MEDICAL SERVICE IN NEW ZEALAND

SIR,—The long-expected plan of the New Zealand government for extending the benefits promised under the Social Security Act was announced towards the end of February It outlined a general-practitioner service of universal application, and an extension of outpatient services at the public hospitals, including laboratory, X-ray, therapeutic and other items These were all to be available within a few days, commencing March 1, 1941 To follow shortly were pharmaceutical and other benefits The general-practitioner service was to be available to all, and was a panel service The doctor was to receive 15*s* per annum for every man, woman and child on his list, with extras for mileage The contract was to be between patient and doctor, with free choice and right of refusal The patient was to take a card to the doctor, who would counter-sign it No limit was placed on the number a doctor could enrol, but a number of penalties for dereliction of duty were laid down

The scheme was greeted by the spokesmen of the B M A, in both national and local circles, with hostility The government had not consulted the association, the scheme was not a good one, and even if it were, it would be quite impossible for the doctors to undertake it, with 25% of their members, and that their most active section, abroad on military service, and the remainder overworked with civil and military demands at home, to say nothing of immediate and remote demands which might be much heavier still The people generally have so far been remarkably apathetic One union of miners held a short strike as an expression of disapproval of the B M A's rigidity No-one hears of many applications by prospective patients for the filling-up of their cards It is certain that up to the present very few doctors are signing cards On present showing, therefore, it seems that the proposal will fail, as did that for maternity benefits in its first version

There is little doubt that the scheme is an ill considered one, and somewhat ill-timed, arising as it does on what would normally be election year, and representing among other things a belated effort to fulfil election promises There is little in it that is good and progressive from the medical point of view, and one cannot imagine that the standard of domiciliary care will be raised by it It confirms the competitive basis of practice among doctors and of itself offers no facilities for cooperation in regard to night duty, holidays and so on So many matters, too, are left in the air—limit on panel lists, whether a practitioner who also professes a specialty is eligible for a list and if so to what extent, and perhaps most of all the effect on the hospital system One of the first results of such a G P scheme would undoubtedly be a great increase in the demands on hospital, consultant, and diagnostic services, whether public or private Many of the public hospitals in New Zealand, unlike their opposite numbers in other countries, have never provided properly for outpatients, either as to accommodation, equipment or staff, so that apart from difficulties owing to the war the establishment of such a G P scheme as is proposed would raise innumerable other problems

The outcome is difficult to visualise On the side of the B M A there has emerged perhaps a slight departure from absolute rigidity, particularly in the utterances of more local spokesmen While the bulk of leaders in the B M A, who are mostly of consultant or semi-consultant class, seem to see no alternative to a panel system for G P s, the G P s themselves are showing an increasing cohesion and determination to avoid the panel, and prefer some scheme of payment per service rendered Some national plan may be forced on the profession by sheer weight of circumstances, such as increasing demands and depleted personnel, but the many and varied anomalies in the hospital and medical services of New Zealand have not yet caused such a breakdown

Auckland, March 19 DOUGLAS ROBB

"SCIATICA"

SIR,—Sciatica being a malady that has provided the therapist with some of his most difficult and thankless tasks, it is perhaps only a just retribution that its very existence as a clinico-pathological conception should now be threatened by some amongst us Out of a natural urge to tidy up reality some surgeons assure us that sciatica is simply a matter of displaced intervertebral discs, but in his article in your issue of May 3, paradoxically entitled Sciatica, Mr Kellgren goes further and, like the Irishman who came face to face with a giraffe for the first time in his life, declares "There's no such baste" With scant regard for well-established facts of clinical observation he ruthlessly tears the notion of sciatica to pieces, and divides the fragments between "ligamentous and muscular lesions," "displaced intervertebral discs" and "miscellaneous nervous diseases" He leaves us no residue of cases of true sciatica—that is, sciatic neuritis One wonders when brachial neuritis will fall a victim to this destructive zeal and what will become of the remnants Even the accustomed definitions of sciatica do not survive his youthful onslaught, for he tells us that although "sciatica has been widely held to be synonymous with a disturbance of the sciatic nerve" in reality neurological disturbances are only occasionally present

What is this new "sciatica" of which Mr Kellgren has studied 70 cases? it is certainly nothing the neurologist will recognise as such, and why retain the name when the thing is declared to have no existence as an affection of the sciatic nerve? In fact, his 70 cases appear to be a conglomeration of unrelated and obscure conditions, including a few cases of displaced intervertebral disc but not a single recognisable case of acute sciatica In short, despite its title, the paper is not about sciatica Clinical experience has shown sciatica to be a malady of subacute or acute onset, characterised by pain along the course of the nerve, pain on pressing or stretching the nerve, pain and tenderness in muscles supplied by it, and sometimes also by paræsthesiæ or sensory loss in its cutaneous distribution, and by diminution or loss of the ankle-jerk In the absence of the essential signs no diagnosis of sciatica is justified, and "deep pain in the leg" is certainly no adequate basis for this diagnosis Generations of acute clinical observers have not all been in error in recognising a true sciatic-nerve affection presenting these signs, which correspond to those characterising the involvement of a peripheral nerve and are not capable of being produced by ligamentous or muscular lesions

We may indeed be grateful to Mr Kellgren for his interesting observations, even though they have nothing to do with sciatica and throw no light upon it Perhaps the striking lesson of his paper is its exemplification of the frequency with which the diagnosis of sciatica is made without adequate evidence (no less than 70 times in fact in this one paper) and of the necessity of a thorough clinical examination of all suspected cases of this malady

London, W 1 F M R WALSHE

A HUNDRED CASES OF BREECH PRESENTATION

SIR,—I respond to the request of Dr and Mrs Jackson and Mr Gairdner for facts and figures from my own experience Our case notes at Leeds are certainly better kept than the examples quoted from Exeter It is of importance to know in a given case of breech delivery with fœtal death whether the pelvis is contracted or not because, if it is, presumably the death was largely if not entirely due to that complicating condition It is interesting to know whether the classical or lower-segment operation is done, because when done during labour the latter is less likely to be followed by general peritonitis or by rupture of the scar in a future pregnancy I cannot tell the authors what percentage of breeches diagnosed at the 34th week turn spontaneously if left alone, not many, I think, as they usually turn earlier than this if at all (a mere expression of opinion) As G F Gibberd[1] says "After the thirty-second week the occurrence of spontaneous version becomes less likely, and the difficulties of manipulation (i e external version) become greater as term is approached" N L White and J D S Flew of University College, London, analysing a series of 293 external versions in 1933, found[2] that hæmorrhage followed in none of 201 done without anæsthesia it was provoked in 6 out of 92 done under anæsthesia and fœtal death, apparently due to placental separation, occurred in 2 of these cases This shows that in skilled hands external version is not a very dangerous procedure In booked cases at Leeds Maternity Hospital from 1926 to 1938, the date of the last published report, there were 2 maternal deaths in a total of 681 breech presentations (mortality 0 3%), during the same period there were, also in booked cases, 17 deaths in 710 deliberate classical cæsarean sections (mortality 2 4%) That is why I wrote that cæsarean section, though technically easier, kills more mothers

During the last four years our fœtal mortality in uncomplicated booked breech deliveries has been 11 in 144 primiparous cases (7 6%) and 5 in 76 multiparous cases (6 6%) These figures do not tempt me to increase the incidence of cæsarean section for breech presentation

Leeds ANDREW M CLAYE

THE CASE FOR MASS RADIOGRAPHY

SIR,—Regarding Dr Jessel's criticism of the cost of mass photo radiography in THE LANCET of April 26, for the 26,100 men examined so far the film used cost £52 16s and the apparatus £977, making £1029 16s altogether The staff employed are one radiologist, two radiographers, who would normally be required for dealing with the ordinary radiography of the R N barracks, and sick-berth ratings who are available for the recording duties and so on and would be required for any scheme of mass investigation The developing solutions used would be required for the routine radiography of a large X-ray department, and the cost of the extra quantity used is negligible when compared with the number of men examined Apart from wages, &c, and developing solutions, the cost per man works out at 9 36*d* Highly trained personnel are not required Even allowing for cost of maintenance, as more men are examined, the expenditure per man will drop The work here is being carried out by the ordinary sick-berth staff, after 14 days' tuition (and work) in the department An experienced radiologist soon picks up the appearances of the smaller film Though economy is desirable, it is the speed of getting large drafts of men through the process that is so important, in order not to interrupt the ordinary naval routine under war conditions

R N Barracks, Chatham W FITZPATRICK

SIR,—I hesitated to add to the list of letters, articles, and memoranda, based mainly on theoretical considerations, which have been written during the last eighteen months on the subject of mass radiography, and I write to you only because I feel that the essential purpose of the procedure is liable to be forgotten, and because Dr Brailsford's letter in your issue of May 3 (p 585) cannot go unanswered

The purpose of mass radiography, as far as tuberculosis is concerned, is the selection of cases for detailed investigation Too often the diagnosis of tuberculosis still comes too late, and we ought to search a stage further back A little, but not nearly enough, can be done by contact examination, we need to reach, if not the general population, at any rate certain groups of it Admittedly there would be difficulties, based mainly on prejudice, but I think that they could be overcome, and I see in mass miniature radiography the only hope of reducing tuberculosis by medical diagnostic means I continually regret that mass radiography of recruits was not commenced in January, 1940, when it was recommended by the Standing Advisory Committee on Tuberculosis

Dr Brailsford's letter gives his reasons for holding the opposite view Instead of criticising each at length, I will give, as briefly as possible, my personal views on three of the points he raised, for I have no reason to believe that they differ materially from those of the majority of tuberculosis workers

(1) As regards the place of radiography in the clinical investigation, let us consider the patients sent to the dispensaries and chest hospital outpatient departments for

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[1] Short Textbook of Midwifery London 1938, p 264

[2] F J Browne Antenatal and Postnatal Care London, 1939, p 154

Letters to the Editor

BONE-GRAFTING THE SCAPHOID

SIR,—I was much interested in Squadron Leader Armstrong's article in your issue of April 26, and your annotation on it. For several years I have made a special study of carpal injuries and especially the fractured scaphoid (see *Lancet*, 1933, 2, 1264; Cyclopedia of Medicine, Surgery and Specialities, Philadelphia, 1939). Though 224 *fractured scaphoids, out of a total of 270* carpal injuries, formed the basis of my Hunterian lecture in 1936, I was, and still am, so uncertain of the exact rôle and the results of grafting that I have withheld publication of this lecture until time has permitted a more comprehensive evaluation of the remote results. Here is a summary of the views which I formed in 1933 and 1936 and to most of which I still adhere.

1. That some 80–90% of fractures treated immediately after the accident unite if the wrist is adequately immobilised for six to ten weeks.

2. That many "neglected recent" fractures—i.e., fractures of over 6–8 weeks duration—should be drilled, grafted or both. I am convinced that in this group grafting does hasten union and is therefore sometimes justifiable for economic reasons, in both peace and war.

3. That old fractures form two main groups—those without arthritis, and those with arthritis in the wrist joint. In the latter group the problem is one of treatment for the arthritis and there is nothing to be gained by attempting to secure union of the scaphoid.

The real problem arises in those cases in which arthritis is not yet present. If the fracture remains ununited osteoarthritis of the wrist is inevitable, and the speed at which it develops depends on the strain to which the wrist is repeatedly subjected. For this reason, and to relieve symptoms, it seems desirable to obtain bony union, even though non-union is often consistent for a time with very fair function. In a certain number—small in my series—bony union can be achieved by adequate immobilisation of the wrist, especially in those fractures in which there is an appearance of cavitation in each fragment at the line of fracture. In the majority, however, immobilisation alone failed, and it is in this group that the effectiveness of grafting (*a*) to secure union and (*b*) to prevent osteoarthritis, should be judged. With improvements in technique such as Squadron Leader Armstrong describes a high percentage of bony union can probably be obtained. Time will show how the wrist after a grafting of the scaphoid stands the strain of heavy work.

There is no doubt that the precarious and variable blood-supply of the scaphoid is one of the factors concerned in determining non-union. This fact, quoted in modern fracture textbooks, has been known ever since the early anatomical studies of Lexer, Preiser, and others—work which was admirably illuminated by Schnek (1930, 1933) and by Logroscino and de Marchi (1938).

Your annotation is not correct when it says that "there is nothing to be gained by either fixation or reconstruction" when the proximal fragment has undergone avascular necrosis. If the wrist is kept adequately immobilised complete revascularisation and bony union will occur in a considerable number of patients. And I cannot agree with your advocacy of excision of one or both fragments, either to relieve symptoms or to forestall subsequent arthritis. I was able to review a number of patients on whom this operation had been performed many years earlier and this is the conclusion I reached. "The results of excision of the scaphoid have been disappointing on the whole. The functional result does not appear to be materially influenced by the extent of the excision—i.e., by removal of the bone in part or in whole, or with the semilunar in addition. Occasionally beneficial results have been seen when the operation has been performed in young patients and in the absence of arthritic changes. But it is under precisely similar conditions that refreshing and bone-grafting operations hold out the promise of greater success and without mutilation."

One final point concerns the site for the selection of the graft. Though a graft of the tibial cortex forms an excellent internal splint, union is perhaps more rapidly promoted by using a graft containing more cancellous bone such as can be cut easily from the lower ends of the radius or ulna, or from the olecranon.

Manchester. H. OSMOND CLARKE.

MEDICAL SERVICE IN NEW ZEALAND

SIR,—The long-expected plan of the New Zealand government for extending the benefits promised under the Social Security Act was announced towards the end of February. It outlined a general-practitioner service of universal application, and an extension of outpatient services at the public hospitals, including laboratory, X-ray, therapeutic and other items. These were all to be available within a few days, commencing March 1, 1941. To follow shortly were pharmaceutical and other benefits. The general-practitioner service was to be available to all, and was a panel service. The doctor was to receive 15*s*. per annum for every man, woman and child on his list, with extras for mileage. The contract was to be between patient and doctor, with free choice and right of refusal. The patient was to take a card to the doctor, who would counter-sign it. No limit was placed on the number a doctor could enrol, but a number of penalties for dereliction of duty were laid down.

The scheme was greeted by the spokesmen of the B.M.A., in both national and local circles, with hostility. The government had not consulted the association, the scheme was not a good one, and even if it were, it would be quite impossible for the doctors to undertake it, with 25% of their members, and that their most active section, abroad on military service, and the remainder overworked with civil and military demands at home, to say nothing of immediate and remote demands which might be much heavier still. The people generally have so far been remarkably apathetic. One union of miners held a short strike as an expression of disapproval of the B.M.A.'s rigidity. No-one hears of many applications by prospective patients for the filling-up of their cards. It is certain that up to the present very few doctors are signing cards. On present showing, therefore, it seems that the proposal will fail, as did that for maternity benefits in its first version.

There is little doubt that the scheme is an ill-considered one, and somewhat ill-timed, arising as it does on what would normally be election year, and representing among other things a belated effort to fulfil election promises. There is little in it that is good and progressive from the medical point of view, and one cannot imagine that the standard of domiciliary care will be raised by it. It confirms the competitive basis of practice among doctors and of itself offers no facilities for cooperation in regard to night duty, holidays and so on. So many matters, too, are left in the air—limit on panel lists, whether a practitioner who also professes a specialty is eligible for a list and if so to what extent, and perhaps most of all the effect on the hospital system. One of the first results of such a G.P. scheme would undoubtedly be a great increase in the demands on hospital, consultant, and diagnostic services, whether public or private. Many of the public hospitals in New Zealand, unlike their opposite numbers in other countries, have never provided properly for outpatients, either as to accommodation, equipment or staff, so that apart from difficulties owing to the war the establishment of such a G.P. scheme as is proposed would raise innumerable other problems.

The outcome is difficult to visualise. On the side of the B.M.A. there has emerged perhaps a slight departure from absolute rigidity, particularly in the utterances of more local spokesmen. While the bulk of leaders in the B.M.A., who are mostly of consultant or semi-consultant class, seem to see no alternative to a panel system for G.P.s, the G.P.s themselves are showing an increasing cohesion and determination to avoid the panel, and prefer some scheme of payment per service rendered. Some national plan may be forced on the profession by sheer weight of circumstances, such as increasing demands and depleted personnel, but the many and varied anomalies in the hospital and medical services of New Zealand have not yet caused such a breakdown.

Auckland, March 19. DOUGLAS ROBB.

TALCUM GRANULOMA

SIR —With reference to your annotation of May 10 I take it that the talcum is used as a lubricant to allow the hand easily to enter the rubber-glove Finely powdered boric acid will render the same service and has the advantage of being soluble in the body and mildly antiseptic. But there is one point where I am not certain . the rubber is impermeable to moisture and the perspiration of the hand is retained in the glove Talcum powder may absorb it so that the hand will remain dry, while the moisture would dissolve the boric acid and the hand be damp causing some discomfort to the surgeon This can easily be put to the test

Shortlands, Kent. A WOHLGEMUTH

CARBON MONOXIDE

SIR —In the memorandum on Gas Casualties issued by the Ministry of Health (quoted on p 613 of your last issue) three classes of poison gases are enumerated vesicants lung irritants and other gases *including carbon monoxide*, and it is stated that ' the gas-mask if adjusted properly and in time. gives full protection to the lungs and eyes against all these gases ' It has always been understood that the gas-mask gives no protection against carbon monoxide

Harrow E A LUM

MEMORANDUM ON AMPUTATIONS

A MEMO on emergency amputations[1] prepared by a subcommittee of the M R C war-wounds committee begins by reminding the surgeon that if he amputates a limb because of the severity of the local injury he assumes a grave responsibility a second expert opinion should always be sought before proceeding to this drastic step Occasionally it may be obvious that the results of reconstructive surgery cannot be better than those of amputation but in general the only justifications for immediate amputation are very severe multiple injuries or destruction of the main blood-vessels of the limb and therefore the imminence of gangrene No matter how severe the destruction of skin comminution of bone or contamination of tissues if the main blood-vessels are not destroyed the limb can usually be saved

IMMEDIATE AMPUTATION

Where for example. a person is caught by a machine or fallen masonry amputation may have to be done without delay. but whenever conditions permit operation should be delayed for an hour or two for the treatment of shock. It should not be postponed too long because pain. fluid loss and the absorption of toxic products aggravate shock by lowering the patient s vitality Where gross injury is associated with a fracture an immediate amputation at the level of the wound may be required. It may merely be necessary to sever a few strands of soft parts and excise badly lacerated muscle but if local destruction has been less severe the operation will amount to a guillotine amputation This will conserve the maximum of bone but is likely to necessitate reamputation later

During the first 6–8 hours after injury there is a reasonable prospect of an amputation stump healing by first intention. so that within this period primary skin suture is permissible A formal flap amputation may be performed at the site of election and the skin flaps sutured in the usual way · unless hæmostasis is perfect drainage is advisable for 24 hours The same procedure may be safe even after 8 hours if the wound is well below the site of election. If the time-lag is somewhat greater than 8 hours and the wound is near the site of election or if the patient is soon to be evacuated, a flap amputation with delayed primary suture should be performed. Mattress sutures are inserted but not tied until 2–10 days later, light traction being applied in the meantime to prevent skin retraction

LATE AMPUTATION

The indications for late amputation are gangrene due to vascular thrombosis massive gas gangrene and danger to life from spreading infection or severe secondary hæmorrhage

If more than 24 hours have elapsed since injury infection of the amputation stump is almost inevitable ; a flap amputation with primary skin suture is therefore unsafe and may be disastrous When primary amputation can be performed well below the site of election the alternatives are (*a*) a guillotine or circular flapless amputation at a low level followed after several weeks by a formal flap amputation at the site of election or (*b*) a flap amputation with the flaps left open or only loosely approximated a formal flap amputation at the site of election being carried out after infection and œdema have subsided In the subcommittee s opinion the primary flap amputation in these cases seems to have no advantage over the guillotine apart from æsthetic considerations and the possible effect of the guillotine stump on morale which can largely be overcome by the infrequent-dressings technique When the amputation must be at or close above the site of election and there is viable skin below the amputation level a flap amputation should be done with traction and secondary suture of the skin flaps If there is no viable skin below that level a guillotine amputation should be done. skin traction being maintained until the wound is healed and no other amputation performed but there will nearly always be enough skin for the formation of modified skin flaps

Guillotine amputation —In a circular amputation the skin is divided at one level the muscles at a higher level and the bone at a still higher level In a guillotine operation skin muscles and bone should strictly be divided in exactly the same plane but the experienced surgeon usually retracts each layer slightly before dividing the next The main purposes of this operation are to save life in severe infections by removing a limb rapidly leaving the smallest possible and most easily drained wound, and enabling a clean amputation to be done later at the site of election and to conserve length of stump when skin has been extensively destroyed

Unless certain precautions are adopted the sequelæ of guillotine amputation may be serious Reamputation has to be done higher up, so that if the guillotine is done at or above the site of election reamputation will leave a short stump which may be useless Unless effective skin traction is applied within 24–48 hours of the guillotine being done skin and muscles will retract producing a conical stump with projecting bare bone. and the whole of this bone may have to be removed at reamputation, leaving a stump which is far too short If the raw surface is repeatedly dressed, the patient suffers severe pain and there is continuous fluid loss with aggravation of shock. and a danger of secondary hæmorrhage · these sequelæ may be avoided by using the infrequent-dressings technique and in the thigh the risk of secondary hæmorrhage may be reduced by ligating the femoral artery just below Poupart's ligament at the time of amputation. If reamputation is performed while there is still infection in the stump—that is before the granulating surface has become clean and œdema has disappeared—healing will not be by first intention and a second reamputation may be needed with further shortening of the stump If a guillotine stump is treated with continuous skin traction it will ultimately heal with a terminal scar and will often be satisfactory without reamputation With a wound below the knee for example if amputation has to be done at or close above the site of election a guillotine amputation may provide a serviceable stump when with skin flaps an above-knee amputation would have been inevitable.

Flap amputation with secondary suture —A flap amputation cannot be performed quite as quickly as a guillotine and the area of exposed tissue is greater · but if the site of amputation is determined by destruction or infection of muscles. the skin below this level being viable, and if the level is at or above the site of election, skin flaps should always be cut.

The increased rates of pay granted to Army and Air Force nurses (*Lancet*, May 3, p 587) have been extended to the Naval Nursing Service examination on account of symptoms more or less suggestive of tuberculosis. In the minority there is recognisable disease, and a radiogram, though not necessary for its detection, helps to determine its character and extent. It will, for instance, give information about soft walled cavities which cannot be obtained by other means. In the majority, however, no definite physical signs of disease can be discovered. In some of these the radiogram is normal, and in my experience, based on the follow up of many such cases, it very rarely happens that tuberculosis does develop during the next year. In other cases a radiographic abnormality is found. In them the first step in diagnosis has been taken—the discovery of a pulmonary lesion. There still remain the questions whether the lesion is tuberculous; if so, whether it is active; and, if active, what treatment, using the word in its widest sense, is needed. These are for the clinician to answer. In addition, there is in the general population a small percentage of persons with slight or practically unrecognisable symptoms who have a tuberculous lesion which often is not of no importance and which even may amount to moderately extensive active disease. These patients will not be discovered till it is too late unless they are sought out by some means such as mass radiography. When Dr. Brailsford says that "clinical signs precede radiographic in at least as many cases as radiographic precede clinical" (and if by "clinical signs" he means symptoms and physical signs together sufficient for a positive diagnosis) I can only say that this is certainly not my experience. When he says that "Mass radiography is used as a substitute or a refuge for poor clinical work," I would reply that the better the clinician the better is he able to understand the limitations of physical examination and to supply the deficiency with radiography. And when he says "It is the clinical condition of the patient and not the radiographic appearances which matter," I still cannot agree. The ostrich, no doubt, feels clinically well as he buries his head in the sand, but this delectable state of affairs is liable to terminate abruptly. True, the hunter may go elsewhere, or he may have already expended his store of lethal weapons, so that no harm comes, but a wiser bird would have acted differently.

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[1] Emergency Amputations. M.R.C War Memorandum No 5 H.M Stationery Office Pp 8 *2d.* Prepared by Mr H.A.T Fairbank, Surgeon Rear-Admiral G Gordon-Taylor Colonel C Max Page Mr P Jenner Verrall and Mr P Watson-Jones.

(2) As regards the adequacy of miniature films, those 36 mm. films which I have seen, taken with a first class technique and projected to a suitable size, showed good definition and, indeed, were preferable to some of the direct radiograms of the present day. These films gave diagnostic results closely comparable with those from the direct films. I am confident that miniature films of this quality would be quite satisfactory for the purpose of a mass investigation.

(3) As regards the cost of mass radiography, the chief expenses are the initial outlay and the salaries of the team of trained workers; and the latter is the more important because it is recurring. But the speed of examination is so great that the cost per patient is relatively small—that is, of the order of sixpence. Dr. Brailsford states that mass sputum examination is cheaper and more reliable. I calculate that the team of workers would have to be at least twice as large as that of the mass radiography unit if several hundred examinations are to be made each day, and I cannot think that the results would be of much value in the mass investigation of groups such as factory workers.

Despite our traditional slowness in adopting new methods, and despite the critics, miniature radiography has made a start in this country, and some results are already available. They, together with those obtained elsewhere, leave no doubt in my mind that mass miniature radiography is an economical, reliable, and valuable—nay essential—advance in the fight against tuberculosis.

Harley Street, W.1. G. T. HEBERT.

GLANDULAR FEVER

SIR,—In his letter of May 3 Professor Paul discusses the point you raised in an annotation, whether the use of sulphonamides may suppress antibody formation in glandular fever. The following case seems relevant.

On Aug. 1, 1940, a young woman felt feverish and her eyelids swelled. She became worse and on Aug. 6 was complaining of severe headache and malaise. She had a temperature of 101° F., tender frontal sinuses and a nasal discharge. Her illness was diagnosed as sinusitis; sulphapyridine, 5 g. daily, was given by mouth until Aug. 14, when she had a temperature of 100° F., inflamed tonsils, enlarged glands in neck, right axilla and left groin, and a palpable spleen. Her body was covered with a wild macular rash worse than measles; her eyelids were swollen, photophobia made her bury her face in her pillow, as in pink disease, and her lips and cheeks were purple. She had certainly had plenty of sulphapyridine. Yet two days later, on admission to the Royal Victoria Hospital, Belfast, her serum gave a positive agglutination in 1/500 dilution with sheep's red cells. There was not much suppression of antibody formation here. Her white cell count was 20,000; mononuclear cells 87%, of which 28% were lymphocytes. With simple hospital care her temperature fell to normal in a week, and her condition improved. The rash faded and the glands settled down, but the spleen still remained palpable and she felt weak. Both her white cell count and mononucleosis were decreasing when she had a relapse in October. Her sore throat and swollen glands returned with a palpable spleen and malaise. She was not fit for work until December, when her white cell count was 5200; mononuclear cells 35%, of which 28% were normal lymphocytes and 4% were of the characteristic vague type of glandular fever. Her Paul Bunnell reaction then gave a positive agglutination in 1/125 dilution.

In the week in which this patient was admitted to hospital Dr. S. B. Boyd Campbell of Belfast saw two similar cases in private, but from quite separate districts. Last month, in Southampton, there was another case of unknown pyrexia with sore throat, enlarged cervical glands and palpable spleen. This woman gave a Paul Bunnell agglutination positive in a dilution of 1/64. Her blood film showed a mononucleosis of 50%.

Since the presenting feature in mild cases may be only sore throat, enlarged cervical glands and no enlargement of the other glands or spleen; and since the symptoms clear up spontaneously there may be many cases escaping undiagnosed in the dump-heap of sore throats.

I am indebted to Dr. Boyd Campbell for permission to record this case. R. F. L. LOGAN.

Royal South Hants and Southampton Hospital.

MYOHÆMOGLOBINURIA

SIR,—Urine from patients who have sustained crushing injuries such as from burial under masonry contains a brown pigment, both in the casts which are nearly always present and in solution. This gives a strongly positive benzidine reaction. Examination of two such urines with the Hartridge reversion spectroscope showed a spectrum identical with that of oxy-myohæmoglobin (prepared by extracting perfused human sartorius with M/15 phosphate buffer at pH 6.5), and corresponding with the wave-lengths given for myohæmoglobin in the literature. The carboxy compound and the met compound formed with ferricyanide also coincide with the bands of the myohæmoglobin compounds and correspond with the wave-lengths given in the literature. The excretion of myohæmoglobin in these cases was a possibility suggested by us (*Brit. med. J.* March 22, 1941, p. 427) on account of the association of these pigment casts with muscle necrosis; depigmentation of muscle is obvious both in the gross and microscopically. As Gilmour has recently emphasised (*Lancet*, April 19, 1941, p. 524), the greater permeability of the kidney to this pigment compared with the hæmoglobin may be responsible for the difficulty of detecting it in the blood-stream. It is interesting, in view of the invariably raised serum potassium seen in these cases, that in the only human case-record of myohæmoglobinuria we have been able to find the plasma potassium rose abnormally during exercise, suggesting increased permeability of muscle-cell membranes (Millikan, G. A. *Phys. Rev.* 1939, **19**, 503).

E. G. L. BYWATERS.
G. E. DELORY.

Departments of Medicine and Pathology,
British Postgraduate Medical School.

BOILS

SIR,—The causes of boils Dr. Hallam mentions have usually been combed out by the time they are referred to me. In my limited experience of skin disease constitutional exhaustion is often an underlying factor. With regard to the local treatment of boils, the principle I wish to establish is that within wide limits it does not matter what is applied to boils, so long as they are left severely alone and the region affected is efficiently splinted for 10–14 days.

Harley Street, W.1. HAROLD DODD.

been selected for a chair of clinical research, and would have been as successful in this field as he was in the practice of medicine His success in this latter sphere, with its increasing demands upon him, crowded out the time necessary for research Yet his laboratory training never left him , and a medical friend has described in the *Scotsman* of May 5 the thoroughness and care, and personal research, which he devoted to his private cases —qualities which explain his great and merited success as a physician He touched medicine on many sides , and he adorned everything that he touched—research, teaching, writing, practice and, in his closing years, hospital administration—giving to every successive phase of his medical work his concentrated effort

" Gulland was a man who greatly enjoyed the society of his fellows, and in every gathering he attended he diffused his cheerfulness, friendliness and good humour These social gifts shone out in public dinners and in the medical dining-clubs in Edinburgh, and will remain in the memory of many of his colleagues as an important part of his contribution to the medical life of Edinburgh Patients all over Scotland, and former residents and assistants now scattered widely over the globe, will always remember the twinkle in Gulland's eye and the cheery pat on the back which did so much to reassure the anxious invalid and to put confidence into the heart of the diffident young clinician or research worker For the last year or two he was beset by physical infirmities that would have defeated most men , but his increasing handicaps only brought out his resolute courage and his determination to go on working to the last Edinburgh mourns the loss of one of her greatest clinicians "

JAMES HOGARTH PRINGLE

M B EDIN , F R C S

Mr J Hogarth Pringle, who died at Killearn, Stirlingshire, on April 24, aged 77, was born in New South Wales, the son of George Hogarth Pringle, F R C S He was educated at Sedbergh and Edinburgh University, where he graduated in 1885 After holding house-appointments in Edinburgh and Glasgow he worked in the Royal London Ophthalmic Hospital and later studied in Berlin, Vienna and Hamburg He returned to serve as assistant to Sir William McEwan, and he was appointed to the surgical staff of the Glasgow Royal Infirmary in 1896 When he retired under the age-limit in 1923 he became an honorary consulting surgeon He was lecturer in surgery and demonstrator in anatomy in the wards of the hospital and at Queen Margaret College, where women studied before they were allowed to attend classes in the university Mr Pringle had a long and fruitful interest in fractures, and in 1910 he published " Fractures and their Treatment " Other publications of his ranged from the descriptions of original operations for umbilical hernia and inguinal hernia to papers on the treatment of hæmorrhage into the optic nerve following head injury He was always an enthusiastic hospital worker and shunned the methods commonly employed to acquire a large private practice He was one of the original members of the British Association of Surgeons and was a member also of the Chirurgical Club founded by Berkeley Moynihan, Robert Jones and Harold Stiles Mr Pringle served in the last war as a major in No 4 Scottish General Hospital, Stobhill He was a thorough operator with highly developed manipulative and mechanical sense, but was not fluent in public speaking or writing Towards strangers he could be austere, but his friends found him a fearless critic with an open-hearted manner based on essential kindness of heart

DENNIS SALMON PAGE

M B CAMB , D P H

Dr D S Page died at the Hampstead general hospital on May 9 at the age of 52 He was educated at Bishop's Stortford grammar school, Caius College, Cambridge, and University College Hospital, and qualified in 1914 After holding resident appointments at the London Chest and the Royal Northern hospitals he served in the R A M C at Salonica At the end of the war he returned for a short time to resident work at Brompton Hospital and then decided to devote himself to pathology He was appointed assistant pathologist at the London Chest Hospital and held this post up to the time of his death, being however seconded to the Emergency Medical Service for some months during 1940 He contributed papers on the cytology of pleural fluids, vitamins and tuberculosis, and pulmonary asbestosis, and in collaboration with Dr Eva Morton published an English translation of Cotoni's work on the Pneumococcus A colleague writes " Page was conservative in his outlook and every new procedure in the laboratory had to be well and truly tested before he would accept it as accurate , but once he was convinced that a thing was right he was not to be moved He was a very staunch friend, and his quiet dry sense of humour was a delight to his colleagues "

Medical News

University of Cambridge

On May 9 the degrees of bachelors of medicine and surgery were conferred by proxy on Denys Laing and E J C Kendall

Royal College of Physicians of London

At a comitia of the college held on May 8, with Sir Charles Wilson, the president, in the chair, Lord Dawson was elected a representative on the governing body of the British Postgraduate Medical School and Dr Terence East an examiner in medicine to the conjoint board The president announced the award of the Gilbert Blane gold medal to Surgeon Commander J C Souter, R N

Licences to practise were conferred upon 35 candidates (28 men and 7 women) who have passed the final examination of the conjoint board —

Nicholas Alders, V R Arulanandom J L Ballantyne P L N Baly, Michael Bates, R I S Bayliss, A B Black, E M Cheffins D R Christie, Doris Critchley, Aileen M Dickins Alfred Fessler J H Fodden, H A Hashemian Mark Hewitt M H W Holloway, J S Johnstone Anne E E Jordan, J M Joshua, H H Kennedy, Arsen Khdjian Padma Kumar K R Llewellin T P Mann J H G Morris Martin Roth Melicent E Salmon, J M W Sedgwick Eleanor M Singer, C C K Smith, J G Stubbs Horace Williams, J A Williams, Jean K M C Wilson and R B Zachary

Royal College of Surgeons of England

At a meeting of the council of the college held on May 8 with Sir Hugh Lett, the president, in the chair, Mr J W Walker and Mr T Harrison Butler were admitted to the fellowship Diplomas of membership were granted to the candidates named in the reports of the comitia of the Royal College of Physicians on April 24 (*Lancet*, May 3, p 590) and in this issue

Mr J B Hume was elected a member of the court of examiners It was decided that the amount of the Cartwright prize should be increased from £85 to £100 The president was appointed, ex officio, a member of the governing body of the British Postgraduate Medical School for one year

University of Sheffield

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Parliament

THE two days' debate in the House of Commons last week on the progress of the war was a triumph for the Government, and for the PRIME MINISTER. Even those, who like Mr LLOYD GEORGE and Mr HORE-BELISHA did not hesitate to criticise, made it clear that their object was to be helpful and not obstructive. Mr LLOYD GEORGE indeed urged that it would be fatal if the party truce and the formation of a coalition government should stifle free criticism in the House of Commons. The House was now more important than the division lobby. Members on all sides of the House spoke as frankly as the limitations of a public session permitted; and the debate must have struck any foreign observer as a remarkable testimony to the confidence of the British people at a critical stage in the war. The key-note of most of the speeches was the need for greater concentration of national effort. The Prime Minister wound up the debate in a great speech and was accorded an ovation as he left the Chamber. The motion of confidence in the Government was carried by 447 votes to 3.

In these blitz times the debate and the ovation have already passed into history; since Saturday night's raid the Chamber itself has joined them, and in future members will have to meet in their "alternative accommodation."

QUESTION TIME

Sugar for Children

In reply to a question Major LLOYD GEORGE, parliamentary secretary to the Ministry of Food, said that the food rationing (special diets) advisory committee of the Medical Research Council is satisfied that the present ration of sugar is sufficient medically for children.

Additional Milk for Invalids

Mr T. E. GROVES asked the Parliamentary Secretary whether he was aware that the form of certificate for additional supplies of milk to persons suffering from certain diseases was objectionable, in that the doctor was required to certify the precise disease from which the person in need of the additional supply of milk was suffering, and that the certificate had to be handed to the local dairyman, who and whose employees were thereby made aware of information which should be strictly confidential, and if he would consider withdrawing the present form at once and instituting some other procedure.—Major LLOYD GEORGE replied: The British Medical Association has already been consulted on this procedure and their views are now under consideration.

Rations for Heavy Workers

Miss E. RATHBONE asked the Parliamentary Secretary whether he or his advisers had worked out, in terms of the available commodities, the minimum iron rations necessary to sustain in full health and efficiency heavy workers, adults other than heavy workers, children and infants, respectively; and whether he had considered the possibility of devising a rationing system calculated to ensure that, while the well to do were encouraged to consume the more expensive foodstuffs, everyone could secure the approximate equivalent, and no one more than the approximate equivalent, of his appropriate iron ration.—Major LLOYD GEORGE replied: The answer to the first part of the question is no. Certain foods are rationed and it is the considered policy to allow the maximum possible ration to all rather than differential rations to particular categories. I am satisfied that the diet that can be obtained under existing conditions is adequate. As regards the suggestion contained in the second part of the question I am advised that difficulties of distribution would be insuperable.

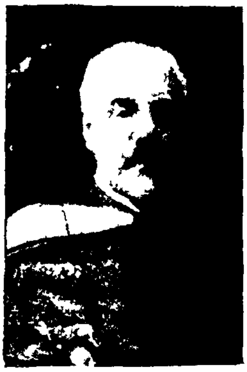
Surgical Corsets

Mr W. LEACH asked the President of the Board of Trade if he could see his way to remove the restrictions on the sale of surgical corsets, contained in the order governing corsets, as persons in urgent need of them were now often unable to get them.—Mr OLIVER LYTTELTON replied: Licences have already been issued permitting the more important kinds of surgical corsets and belts to be supplied without restriction under the Limitation of Supplies Orders.

Obituary

GEORGE LOVELL GULLAND

C.M.G., M.D., LL.D. EDIN., F.R.C.P.E.



THE death occurred in Edinburgh on May 5 of Dr George Gulland, emeritus professor of medicine in the University of Edinburgh. He was 79 years of age. Professor Gulland was born in Edinburgh and educated there at the Royal High School and the university where he graduated in arts and science as well as in medicine. He took his M.B. in 1886, and M.D. also with honours in 1890. After holding house-appointments in the Edinburgh Royal Infirmary and Royal Hospital for Sick Children, he became private assistant to Grainger Stewart, and later assistant physician and physician to the Royal Infirmary. He was also at one time physician to the Royal Victoria Hospital for Consumption, and consulting physician to Chalmers Hospital. From 1911 to 1928 Professor Gulland was principal medical officer to the Scottish Widows' Fund. In 1915 he became professor of medicine in Edinburgh University, retiring from this appointment as well as from his hospital practice in 1928. In 1923–25 he was president of the Royal College of Physicians of Edinburgh. He was at one time a major in the R.A.M.C. (T), and later colonel in the A.M.S.

Professor Gulland was continually associated with teaching of medical students. When he became physician to the Royal Victoria Hospital he conducted a series of clinics on diseases of the chest. During 1900–06 he gave practical instruction in diseases of the blood to senior students and graduates, and for some years from 1907 onwards he conducted lectures in medicine at Surgeons' Hall. While still a student Gulland acted for a year as research assistant to Ray Lankester at University College, London, and when the Royal College of Physicians of Edinburgh opened its research laboratory in 1888 he was one of the first workers. Prizes were awarded to him by the college in 1893 and 1895, and in 1896 he was elected to the Freeland-Barbour research fellowship. On the resignation of Batty Tuke he was appointed curator of the laboratory. He was particularly interested in diseases of the blood—and in addition to many papers he published with Alexander Goodall a monograph entitled "Blood and its Diseases." After his retirement in 1928 Professor Gulland became a manager of the Edinburgh Royal Infirmary, and despite increasing physical disability continued to serve the hospital right up to the short illness which preceded his death. He also carried on his extensive and successful consulting practice after he retired from public medical work.

Professor Gulland married Helen, second daughter of the late Prof. David Masson. She survives him with their son, Prof. John Masson Gulland of the chair of chemistry in Nottingham University, and their daughter who is the wife of Prof. J. I. O. Masson, vice-chancellor of Sheffield University.

Prof. Charles McNeil, F.R.C.P.E., and Prof. Stanley Davidson have sent us this joint tribute: "George Lovell Gulland was endowed among other talents with the gift for sustained and unceasing energy. He abhorred an idle hour either in his working days or holidays; and an intimate friend has told how in his early years of practice, if there were a gap in his afternoon appointments at home, he would fill the vacancy by taking out his bicycle on the Queensferry Road. This driving energy was always purposive, and in the nineties of last century he took an important share with Robert Philip in the tuberculosis campaign, and was also engaged in his own pioneer research in diseases of the blood. There is little doubt that if Gulland had been born a quarter of a century later he would have been selected for a chair of clinical research, and would have been as successful in this field as he was in the practice of medicine His success in this latter sphere, with its increasing demands upon him, crowded out the time necessary for research Yet his laboratory training never left him, and a medical friend has described in the *Scotsman* of May 5 the thoroughness and care, and personal research, which he devoted to his private cases —qualities which explain his great and merited success as a physician He touched medicine on many sides, and he adorned everything that he touched—research, teaching, writing practice and, in his closing years hospital administration—giving to every successive phase of his medical work his concentrated effort

" Gulland was a man who greatly enjoyed the society of his fellows and in every gathering he attended he diffused his cheerfulness, friendliness and good humour These social gifts shone out in public dinners and in the medical dining-clubs in Edinburgh, and will remain in the memory of many of his colleagues as an important part of his contribution to the medical life of Edinburgh Patients all over Scotland and former residents and assistants now scattered widely over the globe, will always remember the twinkle in Gulland's eye and the cheery pat on the back which did so much to reassure the anxious invalid and to put confidence into the heart of the diffident young clinician or research worker For the last year or two he was beset by physical infirmities that would have defeated most men, but his increasing handicaps only brought out his resolute courage and his determination to go on working to the last Edinburgh mourns the loss of one of her greatest clinicians "

JAMES HOGARTH PRINGLE

M B EDIN , F R C S

Mr J Hogarth Pringle, who died at Killearn Stirlingshire, on April 24, aged 77, was born in New South Wales, the son of George Hogarth Pringle, F R C S He was educated at Sedbergh and Edinburgh University, where he graduated in 1885 After holding house-appointments in Edinburgh and Glasgow he worked in the Royal London Ophthalmic Hospital and later studied in Berlin Vienna and Hamburg He returned to serve as assistant to Sir William McEwan, and he was appointed to the surgical staff of the Glasgow Royal Infirmary in 1896 When he retired under the age-limit in 1923 he became an honorary consulting surgeon He was lecturer in surgery and demonstrator in anatomy in the wards of the hospital and at Queen Margaret College, where women studied before they were allowed to attend classes in the university Mr Pringle had a long and fruitful interest in fractures, and in 1910 he published " Fractures and their Treatment " Other publications of his ranged from the descriptions of original operations for umbilical hernia and inguinal hernia to papers on the treatment of hæmorrhage into the optic nerve following head injury He was always an enthusiastic hospital worker and shunned the methods commonly employed to acquire a large private practice He was one of the original members of the British Association of Surgeons and was a member also of the Chirurgical Club founded by Berkeley Moynihan, Robert Jones and Harold Stiles Mr Pringle served in the last war as a major in No 4 Scottish General Hospital Stobhill He was a thorough operator with highly developed manipulative and mechanical sense, but was not fluent in public speaking or writing Towards strangers he could be austere, but his friends found him a fearless critic with an open-hearted manner based on essential kindness of heart

DENNIS SALMON PAGE

M B CAMB , D P H

Dr D S Page died at the Hampstead general hospital on May 9 at the age of 52 He was educated at Bishop's Stortford grammar school, Caius College, Cambridge, and University College Hospital, and qualified in 1914 After holding resident appointments at the London Chest and the Royal Northern hospitals he served in the R A M C at Salonica At the end of the war he returned for a short time to resident work at Brompton Hospital and then decided to devote himself to pathology He was appointed assistant pathologist at the London Chest Hospital and held this post up to the time of his death, being however seconded to the Emergency Medical Service for some months during 1940 He contributed papers on the cytology of pleural fluids, vitamins and tuberculosis and pulmonary asbestosis and in collaboration with Dr Eva Morton published an English translation of Cotoni's work on the Pneumococcus A colleague writes " Page was conservative in his outlook and every new procedure in the laboratory had to be well and truly tested before he would accept it as accurate, but once he was convinced that a thing was right he was not to be moved He was a very staunch friend, and his quiet dry sense of humour was a delight to his colleagues "

Medical News

University of Cambridge

On May 9 the degrees of bachelors of medicine and surgery were conferred by proxy on Denys Laing and E J C Kendall

Royal College of Physicians of London

At a comitia of the college held on May 8, with Sir Charles Wilson, the president, in the chair, Lord Dawson was elected a representative on the governing body of the British Postgraduate Medical School and Dr Terence East an examiner in medicine to the conjoint board The president announced the award of the Gilbert Blane gold medal to Surgeon Commander J C Souter, R N

Licences to practise were conferred upon 35 candidates (28 men and 7 women) who have passed the final examination of the conjoint board —

Nicholas Alders, V R Arulanandom J L Ballantyne P L N Baly, Michael Bates, R I S Bayliss A B Black, E M Cheffins D R Christie Doris Critchley, Aileen M Dickins Alfred Fessler J H Fodden, H A Hasheman, Mark Hewitt M H W Holloway J S Johnstone Anne E E Jordan J M Joshua H H Kennedy Arsen Khidjian, Padma Kumar K R Llewellin T P Mann J H G Morris Martin Roth Melicent E Salmon J M W Sedgwick Eleanor M Singer C C K Smith, J G Stubbs Horace Williams J A Williams, Jean K M C Wilson and R B Zachary

Royal College of Surgeons of England

At a meeting of the council of the college held on May 8 with Sir Hugh Lett, the president, in the chair, Mr J W Walker and Mr T Harrison Butler were admitted to the fellowship Diplomas of membership were granted to the candidates named in the reports of the comitia of the Royal College of Physicians on April 24 (*Lancet*, May 3, p 590) and in this issue

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On the register of veterinary surgeons for 1941 there are 3855 names, 133 more than in 1940

The Minister of Health has appointed Miss M E Flambert and Miss M G Lawson to be deputy nursing officers at the ministry They will work under the chief nursing officer, Miss K C Watt, in the new nursing division

Worcestershire county council would like the Minister of Health to remedy the shortage of nurses in their fever hospitals and sanatoria by introducing compulsory service for women, by disallowing transfer from nursing to another occupation without permission, by obtaining from women who register particulars of any nursing experience they have had in hospitals, by fixing nursing salaries throughout the country subject to local variations and by facilitating the approval of fever hospitals as training schools

Appointments

Collins, H W, M D Lausanne, M R C S, D M R E medical referee for Southwark and Woolwich (circuit 47) and Kingston on Thames and Wandsworth (circuit 45)

Dannatt, R M, M B Lond F R C S temp M O at Exeter city hospital

Ferguson, William, M B Aberd temp asst school M O for Cornwall

Finn D G, M B Dubl senior resident asst M O at London Road Hospital, Stoke on Trent

Harte, E H, M B Dubl deputy M O H and deputy school M O for Harrogate

Latta, Sheila, M B Glasg temp asst school M O for Cornwall

Palfy, J G, M R C S, D P H asst school M O and M O H for Barnard Castle urban and rural districts

Thompson, C G K, M B Edin D P H deputy M O H for Ealing

Wellish, G C, M B Sydney F R C S medical referee for Epsom and Guildford (circuit 48) and Croydon (circuit 56)

Williams, Margaret I, M B Manc, M R C P, D P H temp asst school M O for co Durham

Colonial Medical Service—The following appointments are announced

Cave, M A M R C S, D T M & H medical officer, Gold Coast,

Cooper, P R, B M Oxf, D T M medical officer, Gold Coast,

Davies C W, M R C S medical officer, Kenya,

Horn, D W, M B, D T M & H medical officer, Gambia,

Kenrick W N, M R C S, D T M & H medical officer, Uganda,

Manson Bahr, D H, M R C S, D T M & H medical officer, Kenya,

Palmer, R W, M R C S medical officer, Gold Coast,

Walker, A J, M B Lond, D T M & H medical officer, Kenya,

Young, W B, M R C S, D T M medical officer, Malaya

Births, Marriages and Deaths

BIRTHS

Dowdeswell—On May 10, at Nairobi, Kenya, the wife of Dr R M Dowdeswell—a son

Evans—On May 8, at Colchester, the wife of Captain Fennell Evans R A M C—a daughter

Exner—On May 9, at Winchester, the wife of Dr G G Exner, of Harley Street—a daughter

Harmer—On May 11, at St Albans, the wife of Mr Michael Harmer, F R C S—a daughter

Hewer—On May 10 at St Albans, the wife of Dr C Langton Hewer—a daughter

Lancaster—On May 10 at Fulmer Chase, Fulmer, Bucks, to Lesley Barclay (*née* Hibbert), wife of Capt J S Lancaster, R A M C—a daughter

Page—On May 8, in London, the wife of Mr Basil H Page, F R C S—a daughter

Starling—On May 7, at Eccleshall, the wife of Dr Evelyn Starling—a daughter

Tierney—On May 8, at Guildford, the wife of Major T Fane Tierney, R A M C—a daughter

MARRIAGES

Bell Tawse—Cousins—On May 10, at Tunbridge Wells Alan J S Bell Tawse, M B, R A F V R, to Margaret Irene Cousins

Browne—Cunningham—On April 26, at Cambridge Richard Charles Browne, M R C P, son of Dr F W Browne, Shirehampton, to Barbara Cunningham

Hannah—MacLellan—On May 5 at Aigburth Liverpool, James Bradshaw Hannah, M B, lieutenant R A M C, to Eleanor Margery MacLellan

Ridley—Wetherill—On May 10 at Ewhurst Surrey, Nicholas Harold Lloyd Ridley, F R C S, to Elisabeth Jane Wetherill

Stevenson—Jervelund—On May 10, at Fleet, Derek Stevenson, M R C S, captain R A M C, to Pamela Mary Jervelund

DEATHS

Gordon—On May 5 at Crowborough, Mary Louisa Gordon, L R C P E, aged 79

Norris—On May 11, at Sidmouth, Herbert Murray Norris, L R C P I, L M, formerly of Park Road, Regent s Park N W

Page—On May 9, Dennis Salmon Page, M B Camb, D P H, of Kingsley Way, N 2

Notes, Comments and Abstracts

A PLAN FOR CANCER CONTROL

Dr Robert McWhirter, in his Honyman Gillespie lecture delivered in Edinburgh on May 8, pointed out that the death-rate from cancer still showed a progressive increase in spite of the progress made in treatment, This increase was not entirely due to the accurate means of diagnosis now available Parliament, in the passing of the Cancer Act, had recognised the position as serious Access to some 12,000 records of malignant disease in the files of the radiotherapy department of the Edinburgh Royal Infirmary, and the opportunity to study, at first hand, over a thousand new cases each year had enabled him to inquire into the causes of the increase Failure to reduce the death-rate appeared to be due largely to the fact that patients did not obtain treatment sufficiently early, that treatment was not always adequate, and that insufficient use was being made of past experience in order to advance methods more rapidly To overcome the present difficulties all diagnosis, treatment, and aftercare should be centralised One of the main functions of the central controlling body should be to secure early treatment Adequate early treatment of cancer of the breast promised to give a five-year survival rate in about 90% of cases, but the results progressively deteriorated with delay Advanced cases were still far too common, and in a recent consecutive series of 615 breast cases no fewer than 29% were advanced when they were first referred for treatment The fault might lie in the training of the medical student, who was often shown advanced cases because early cases came late to hospital, he was taught an elaborate differential diagnosis, depending largely upon the signs of advanced disease To the central body must be referred all cases presenting the slightest symptoms suggesting malignant disease, an adequate staff of trained specialists at the centre would be required to make a differential diagnosis which might often be extremely difficult Increased knowledge of the earliest stages would be thus obtained and would be passed on in undergraduate and postgraduate teaching The centre would also be responsible for securing adequate treatment There should be no restriction—due to insufficiency of personnel or of apparatus—placed on the use of any particular method Analysis of past work would indicate whether improvement was possible, and there would thus be a constantly changing definition implied in the term "adequate treatment" The centre must also assess results Too often at present no real assessment was made The work done must be evaluated by careful analysis and comparison Greater uniformity of records would simplify this analysis The personal factor must be eliminated from such assessment, and in malignant disease this could be done by using that simplest of standards, the survival rate This should be expressed as a percentage of the survivors from all cases of cancer occurring in the area served by the centre, it would then also be a measure of the activities of the group When the value of any particular method of treatment was to be assessed and compared with another, the three-year symptom free rate must be used Finally the centre must plan future work Once a method of treatment has been introduced there is a tendency to go on using it, and it may become the predominant concern of the surgeon or radiotherapist undertaking treatment Older methods continue to be used because workers fail to read and appreciate the literature, or have too little material for critical study Planning of future work requires the assessment of results in different anatomical sites, in different types of tumour, and in different grades of malignancy At present, Dr McWhirter remarked, there was much rivalry between the surgeon and the radiotherapist, and even between the radium specialist and the X-ray specialist The emphasis must be on treating the patient by the method most likely to cure his disease Little further extension of surgical technique was possible, treatment by radiotherapy, now that an accurate unit of dosage had been defined and adopted, offered the most hopeful line of advance Radiotherapy must include both radium and X rays, but the enormous enthusiasm for the former had rightly waned The application of radiotherapy, however, was limited by the total radiation which the body would stand. In the Royal Infirmary in recent years, just over 50% of patients had been treated by radiotherapy and only 25% by surgery alone; the remainder had had combined treatment. To meet the demand for increased radiotherapy a large number of new trained technicians would be needed, but a radiotherapist was primarily a clinician with a sound knowledge of pathology and the physical aspect of his duties was comparatively small.

THAILANDIC TWINS

It is difficult to see why errors in normal development should concern anyone except those immediately affected, but when a mother produces triplets, quartets or quintuplets a continent falls down and worships and what is more to the point handsomely endows the error. Those who have passed the middle period of life will remember the stir caused in the minds of their elders by the arrival in Europe of the Siamese twins. The subject was not considered fit for children but was so eagerly discussed by nursemaids that some whispers came to the young prick-ears and today they will read with interest Dr A. B. Luckhardt's account[1]—based largely on the autopsy report published in the *Philadelphia Medical Times* in 1874—of Chang and Eng.

Their parents were simple fisher-folk who lived near Bankok and for some years remained in ignorance of their gold mine till the discerning eye of a Scotsman appreciated the possibilities of the freak. He put them on the road where later they met Barnum; thanks to his showmanship they did well enough to retire to North Carolina where they lived with their families for at least twenty years before they died at the age of 63. The doctors of the day in Philadelphia made determined efforts to obtain an anatomical survey of the bodies and achieved considerable success. They left little undone in their study of the band connecting the twins; probably there would now have been a more persevering search for nerve-fibres, but as far as muscle, vessels, ligaments, membranes and fascia are concerned the dissection and report were complete. The band had developed at breast level and was 4 in. long by 3½ in. deep. On the skin of the antero-inferior surface of the band was their common umbilicus, through which the two hypogastric arteries on each side probably passed. It was not possible to decide whether there had been two umbilical veins or whether the umbilical cord and placenta had been single or double. Inside the band was a cartilaginous bridge joining their xiphisternums, a vascular connexion joining the two livers and three blind peritoneal pouches, two continuous with the peritoneal cavity of Chang, the left-hand twin, and one continuous with the peritoneal cavity of Eng. These pouches projected like glove-fingers across the middle line of the band, one above the vascular connexion and two below it. "Thus if the band had been divided in the middle line from above downwards the knife would have passed successively through the skin, the conjoined ensiform cartilages, the first peritoneal pouch (Chang's), the vascular connexion between the livers, the second peritoneal pouch (Eng's), the third peritoneal pouch (Chang's), the remains of the hypogastric arteries, and so out, dividing the common umbilicus." That there was continuity between the hepatic circulations of the brothers was shown by injecting coloured material into a tributary of the portal vein in Chang's body, when it appeared in the liver of Eng. In life, however, this anastomosis could have had little importance, since Chang could get drunk without exhilarating his brother.

Additional details of their anatomy and temperaments have reached us from Prof. Alan F. Guttmacher of Johns Hopkins University who gives the following account[2] of them:

> A skin stimulus applied to the very centre of the band was felt by both, but on moving the stimulus away from the centre the other twin could no longer appreciate it when it had moved more than a half inch toward his brother. When either coughed, an impulse was transmitted to the band, as though there were a hernial sac running through the tissue. In infancy they were always placed face to face, but when they began to walk this proved very awkward, so that they constantly attempted to rotate their chests lateralward. They succeeded in part so that they could stand half sideways, yet when grown men they continued to face each other as they dressed. Owing to the pliability of the band, they moved about quite freely. When Sir James Simpson examined them in Edinburgh at the age of 58 he wrote:

> "In regard to progression they walk readily and they can run and swim. Their movements are, from education, so harmonious as to seem at first as if they were directed by a single mind. In farming operations at home they often work together, and with different kinds of tools. They are keen sportsmen and good shots. In features the brothers greatly resemble each other. They are short but wiry looking men, Eng the taller of the two being 5 feet 2¼ inches, Chang an inch shorter. This combined with their lateral position, makes it appear as though Chang is leaning on Eng."

> They were not, however, of equal health, strength or temperament. Eng, the right twin, was always the stronger and healthier of the two and had the more amiable disposition, while Chang was often irritable. Chang was somewhat deaf while Eng heard acutely. Their pulses were not synchronous and substances swallowed by one did not appear in the urines of both; they tested this with potassium iodide and also asparagus. Their viscera were properly situated; there was no situs transversus. Ordinary infectious diseases were shared by both, including the shaking agues of malaria, yet other ills such as toothache were experienced separately. They were intelligent, well-informed and good men of business. Adapting themselves remarkably to their enforced existence as a single organism, Sir James Simpson said in a lecture:

> "They were completely harmonious in mind and temperament. When spoken to, they are always accustomed to listen together to the same conversation, one or the other giving any required answer or observation; but when tested, each can carry on a separate conversation. They are perfect English speakers, and scholars as well. When reading history or poetry, of which both are fond, one usually reads aloud and the other listens. They sleep and wake separately. . . . Their feelings of hunger and thirst and the calls of nature upon them, are generally responded to simultaneously, but not always so, or necessarily so. Their minds are indeed more dual than their bodies, for the latter are united while the former are not."

> In 1872, at the age of 61, while on a sea voyage from Liverpool to New York Chang had a paralytic stroke, which so incapacitated him that his healthy brother had to half drag the paralysed victim about. But they lived until January, 1874, when Chang became ill with bronchitis, and next morning was found dead in bed. When Eng was told he said in a resigned fashion, "Then I am going also." Soon he complained of a feeling of suffocation and asked to be propped up in bed. He became weaker and weaker, and in two hours he died. The autopsy indicated that Chang died from a brain hæmorrhage, and in the absence of any serious lesion in the case of Eng, his death was attributed to "fright."

COLOUR PREFERENCES OF FLIES AND MOSQUITOES

Flies are no doubt attracted into our homes by the smell of food, by warmth, and by chance of shelter from wet weather, but there is some evidence that they also prefer certain colour schemes and can be deterred by the choice of the right interior decoration. Unfortunately, however, there is little agreement as to which colours attract and which repel. Berry and Freetown (*J. econ. Ent.* 1935, 28, 913) found the pale colours including white more repellent to the house-fly than the intermediate ones, which included aluminium, and the darkest were decidedly the most attractive. Awati (*Ind. J. med. Res.* 1920, 7, 553) on the other hand, found that yellow was most and red and violet least attractive to flies, whereas Lodge (*Bull. ent. Res.* 1918, 9, 141) could find no favoured colour either in foods, lights or fabrics. Many years ago G. H. F. Nuttall (*J. Hyg. Camb.* 1902, 11, 72) made a study of the colour preferences of *Anopheles maculipennis* in which he used even-sized boxes with linings of different colours. The mosquitoes were confined in a tent, and Nuttall counted the number alighting on the boxes on 17 successive days, when the boxes were moved to different positions each day The totals were navy blue 108, dark red 90, brown 81, scarlet 59, black 49, slate-grey 31, olive-green 24, violet 18, leaf-green 17, blue 14, pearl-grey 9, light blue 3, ochre 2, white 2, orange 1, yellow 0 The United States Navy, on the strength of this work, withdrew its regulation navy-blue shirts in malarious districts and issued light ones The general preference of mosquitoes for dark blue and dark red over yellow has been confirmed by numerous observers in hot countries, and it seems likely that both mosquitoes and flies prefer dark surfaces, yellow being for most insects, as for man, the most luminous part of the spectrum There is, however, a complication which does not seem to have been taken into account in any of the experiments Many insects, and probably house-flies among them, see ultraviolet as a colour, so that if a given "blue" or "white" reflects ultraviolet light it will look to the insect totally different from one which does not reflect this part of the spectrum and may be more attractive or repellent This may explain some at least of the discrepancy in published observations

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[1] *Surg. Gynec. Obstet.* Jan. 1, 1941, p. 116.

[2] human multiple pregnancy shortly

SUFFERING AND GUILT

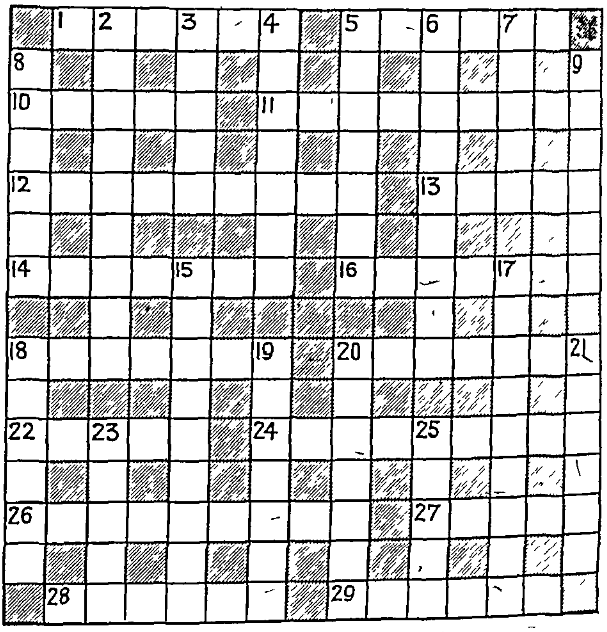
PAIN, as our profession sees it, plays little part in Mr C S Lewis's discussion ("The Problem of Pain" London *The Centenary Press* Pp 148 *3s 6d*) His problem is to reconcile the existence of suffering and cruelty, mental and physical, with the Christian conception of a wise and good creator, and in a style that is simple and sincere he describes his own beliefs and demonstrates that his religion serves him, as every man's religion should, as a satisfactory philosophy of life The central theme is the sense of sin, a sense which, the writer points out, results from the Fall, could be assumed by the apostles in their pagan hearers, and is necessary, in order to reconcile us to all the ills of this world This sentiment of guilt (though this is not perhaps Mr Lewis's view) is, whatever its origin and whether conscious or unconscious, so general that it greatly influences human behaviour and its assuagement is a psychological problem in almost every race of people Mr Lewis shows that he is aware of the difference between his own aim of emphasising this sentiment as essential to reconciliation and that other aim which would remove it as something unnecessary and harmful Inasmuch as the question influences the handling of people sick in body and mind, it may confront us at any moment, and we can at least profit by Mr Lewis's exposition and realise that for him and many others this sense of guilt is something beyond question, and for them the solution he offers is valid and satisfactory

GERMAN DRUG TRADE RAMIFICATIONS

FOR some time past, as reported in the American press, agents of various departments of the federal government of the United States have been examining the stock ownership and control of American corporations which were suspected of having German connexions, including some which are believed to have had no German financial interests since the war of 1914–18 Commenting on this inquiry, the *Oil, Paint and Drug Reporter* of New York says that "many of the conditions and practices under investigation may not be illegal but are being studied for diplomatic reasons" From this it may be inferred that charges made against some of the firms are incidental to inquiries of another kind, such charges usually being that patent-licensing and other agreements made between concerns in Germany and American corporations are contrary to American law A number of well-known companies have been served with subpœnas requiring them to produce their books and records before a federal grand jury sitting in Newark, New Jersey Each subpœna calls for information relative to the respondent's dealings with any of some hundred companies in Germany, France, Switzerland and Italy, as well as in the United States Details have been collected concerning the international operations of the German concern I G Farbenindustrie Investigations have been made of the citizenship and private activities of persons with German-sounding names who are serving as officials of many American chemical and pharmaceutical companies Primarily these investigations are concerned with the suspicion that agreements between European firms and American agencies effectively preserve German control over certain products which are of major importance from the standpoint of national defence, these include vaccines, an anti-shock hormone, sulphanilamide, drugs for the treatment of venereal disease and sex hormones It is also suspected that large German financial credits have been created in the United States and in South America by the use of such agreements, and that firms in Germany have been able to sidetrack the British blockade which prevents shipments being made directly from Germany to South America These firms, it is thought, have arranged for the manufacture of products by associated companies in the United States, whence they are shipped under their German trade names to South American firms which had placed orders in Germany

The Board of Trade have arranged for the manufacture of an adequate supply of an agreed range of standard types of high tension batteries for hearing aids The new types have been designed to cover the requirements of all United Kingdom makes of hearing aids In general the new batteries are rather larger than those formerly in use, and some instruments will need minor modification in order to accommodate them, but no modifications will be required in the mechanism of any apparatus Users are advised to communicate with the manufacturers of their hearing aids, who will inform them of the *most appropriate new types of battery and of any modi*fications to their sets which may be necessary

LANCET CROSSWORD



ACROSS

1 The fell sergeant is strict in his (6)
5 Food for night bombers (6)
10 The unfailing support of the good physician (5)
11 Can't change its spots—that's how you spot it (9)
12 Dismal diet for dysentery (two words, 4, 5)
13 This is more use in the singular than the plural (5)
14 Puts my sugar in a ferment (7)
16 The farmer's wife does it by attention to them (7)
18 Toted me all over the place to get the stuff (7)
20 Makes as certain as sun rise (7)
22 Cold hearted North Riding (5)
24 The hardy can have them (two words 4, 5)
26 The magic bullet (9)
27 Past, present or future surgeons object when patients are this (5)
28 A profit tax that seldom troubles doctors (6)
29 How to behave in 24 (6)

DOWN

2 Not the usual crossword net (9)
3 To get slim, stand on head (5)
4 Work war or play this is the place (7)
5 Sixth degree burn (7)
6 Plain or pigmented, its a poor lookout (9)
7 A French kind of smell (6)
8 Give it tea and it gets into a temper (6)
9 Appropriate for the walls of the doctor's waiting room (6)
15 The proper days for jam (9)
17 23 might be classed as one of these (9)
18 He generally starts something (6)
19 The skull does it for the brain (7)
20 A sweetbread specialty (7)
21 'Only my doctor can understand mine' (6)
23 Small and nasty it carries *something smaller and* nastier (5)

ORIGINAL ARTICLES

AN ADDRESS
TO THE
ROYAL COLLEGE OF PHYSICIANS*

BY

THE PRESIDENT, SIR CHARLES WILSON

You know already that this College is very old that the line of your presidents reaches in an unbroken chain back to the second Tudor king You may be told presently that the frailty of great age has overtaken this ancient foundation, that it has gathered moss, and that the medical bodies which are known to you—the Medical Research Council, the General Medical Council and the like—came into being to discharge duties which once were ours and which were taken from us because we had neglected them Men as they grow older have always sighed for lost opportunities since Horace sang

> *Eheu fugaces, Postume Postume*
> Oh for the years that are lost to me, lost to me

What fellow has not wished that the College had given birth to the Association of Physicians, and that the *Quarterly Journal*, *Brain*, *Heart*, and publications of this pattern, which are the growing edge of medicine, went into the world from our own College press ?

But all this is gone and done with No man who does things goes mumbling about the past for long This College is what we make it If there is anything wrong with it, it is within our power to set it right If we do not it is we, and we alone who are to blame We are too conscious of what our forebears left undone , too slow to recognise what they did, and did well Here in this College gathered under one roof, are more than six ndred fellows, the leaders of every branch of our lling, save our surgical brethren with whom we live in ppy harmony It seems to me a fine example of resight and good planning We as fellows welcome it ecause it enables us to fulfil the first function of the ollege—to be ready, when the Government of the day mes to us for counsel, to speak with the knowledge that e do so for all the leaders of our profession We shall eak even more effectively if we are certain what is in e minds of our full fellowship, what is the corporate pinion, the corporate policy, of the College When the ollege moves, when fellows meet daily contact will help o crystallise this opinion

The College has other functions I hope that presently unds may be placed at the disposal of our librarian to ake of our library, with its treasures, a national museum f the history of medicine, to which men will come from he English-speaking world I hope too that when the ollege moves, as we shall move after the war, it may be ossible to endow a research fellowship, and that provision may be made in our new building for laboratories t has been felt that this College which is the home of the eaders of our calling, could do more to promote the dvancement of learning

But the first purpose of this college, which dwarfs all thers, is and always must be to explain to whatever overnment may be in power the considered views of hose who lead our profession We may be asked ultimate questions, we may be asked the meaning of education, or at any rate it may be demanded of us whether we are satisfied with the student's education If we are frank I think we shall confess that we are far from satisfied Here is an examination paper in history given to me by a boy of 16 It was not set to a few promising lads, but to 98 boys in a single school Fellows will note that of the fifteen questions in the paper the boys were required to answer only four A wise examiner was bent on finding ground where the boy knew his facts, so that he, the examiner might test how he could handle those facts, how far he could use his wits, and to what degree his power of reasoning had been developed Here—and the contrast is disconcerting—is a paper set in the Conjoint medicine The questions seem to demand junks cut from a textbook , they are tests of memory or attempts to ferret out some small spot in the wide field of medicine where the student might be surprised without his facts This first impression is borne out by a scrutiny of the questions set in the two papers The boy of 16 is asked

1 What type of class or personal privilege would you consider to be justifiable and what indefensible ?

2 " Sea power can prepare for victory in a war , it can never complete it " Do you think history bears out this dictum ?

3 Discuss in your own words the character and resultant behaviour of any personality in any novel that has interested you

4 Give an example from European or Old Testament history of the value to humanity of fanaticism

5 " We cannot restore, we ought to recreate " Discuss the bearing of this dictum on any building that you know that has been injured by bombing

If this boy should become a medical student, we take charge of his education for six more years, and at the end we ask him to reproduce, as faithfully as may be, some page of the standard textbook the signs and symptoms and treatment of bronchiectasis or some equally recondite problem We are turning the student in the clinical years into a mere scavenger of facts We have to extirpate this blind cult of memory and the stored fact We have to ask how the quick curiosity of the average child has been converted into the dull drudge we so often encounter in the finals , where and how we have violated the canons of education We have to admit that a man is not safe because he has seen diseases but only in so far as his power of reasoning has been developed

* * *

If we are to answer questions of this kind we must be prepared to take a step in advance of public opinion, we must be ready to lead For what purpose would there be in bringing together the leaders of our calling unless to lead ? It is therefore fitting that we should inquire what are the particular qualities of leadership that we may reasonably look for in a fellowship such as ours Detachment and disinterestedness certainly, for they are the fruit of a scientific training But I think we might ask for more and demand two qualities of leadership moral courage and a willingness to accept responsibility They are the rarest virtues in a democracy , their very rarity is a source of anxiety to the thoughtful student of our times I would not care to end on a sombre verdict of that kind nor is it necessary while we still possess in our Prime Minister an almost sublime example of the tranquil acceptance of responsibility not only for thousands of lives but indeed for the fate of the world

The College will ask more of fellows in the future than it has required of them in the past I do not think it will ask in vain Many of you must have read with dumb pity the brief chronicles in the *Times* of airmen who have fallen in battle Their stories had hardly begun, and yet there was enough to tell us that in their own schools and colleges they were already the leaders of their generation While this is happening, while the real wealth of our race is being spent, I do not believe that any fellow—that any Englishman—would wish to pursue exclusively those personal aims and hopes and aspirations natural to other times at any rate until peace comes, until

> Night's candles are burnt out, and jocund day
> Stands tiptoe on the misty mountain tops

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* Addressed to new Fellows on the occasion of their admission to the College

DIPHTHERIA BACILLI IN FLOOR DUST

BY

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IT has been pointed out previously (Wright et al. 1941) that virulent diphtheria bacilli can often be found in large numbers in dust from the floor of diphtheria wards. It is clear, therefore, that steps taken to prevent cross-infection in hospital, and possibly to prevent respiratory infections in general, must be designed with reference to this fact. Before we can decide to what extent infection is disseminated directly through the air from one patient to another it is necessary to know more about the extent to which dust contributes to the bacterial content of the air. Only when this source has been removed can any conclusions be drawn as to the importance of other sources. In this paper we record further observations on this subject, with particular reference to the frequency of diphtheria bacilli in dust and the efficiency of various measures currently adopted for their destruction and for the prevention of contamination of air from this source.

METHOD

The dust was collected from the ordinary ward sweepings and placed in 6 in. by 1 in. test tubes. In the laboratory an amount of broth about equal to the volume of the dust was added to the whole or part of the sample; the mixture was well shaken and then stirred up with a sterile glass rod or thick Nichrome wire. The coarse particles were allowed to settle out and a large loopful of the supernatant fluid was streaked over three 3 in. plates of Hoyle's medium (Hoyle 1941). No attempt was made to count the exact number of diphtheria bacilli present. After 18–24 hours incubation diphtheria bacilli can usually be detected readily and their type determined; gravis colonies are easy to recognise and intermedius colonies usually not difficult, but mitis strains are often hard to distinguish from other organisms. The diphtheria bacilli were isolated and the type determination checked by fermentation tests; in certain cases the virulence was tested by subcutaneous inoculation into guineapigs (Holt and Wright 1940). All gravis and intermedius strains so far tested have proved virulent but some mitis strains were non-virulent.

Contamination of air has been tested by the exposure of 3 in. plates of Hoyle's medium for various times (usually an hour) on tables at about 3 ft. from the floor. The number of colonies of diphtheria bacilli was counted at 48 hours together with the number of easily visible colonies of other organisms.

STRAINS FOUND

We have examined 44 samples of dust from the untreated floors of wards in fever hospitals. In 5 no diphtheria bacilli were found (2 from scarlet-fever wards, 3 from diphtheria wards). In 37 samples diphtheria bacilli were present, sometimes in extremely large, sometimes in small numbers. Gravis strains alone were found in 22 specimens, gravis and intermedius in 7, gravis and mitis (virulent) in 3, gravis, intermedius and mitis (virulent) in 3, and intermedius alone in 2. The predominance of gravis strains reflects the high incidence of this type in infections in Liverpool at present (Wright 1941), but may have been exaggerated because the gravis colonies are so much easier to detect in mixtures.

In a babies' hospital, 3 samples from wards in which diphtheria had occurred contained gravis, intermedius, and gravis plus intermedius strains respectively, accurately reflecting the ward distribution of the infections. Of 8 samples from air-raid shelters at one or other of these hospitals, 3 contained no diphtheria bacilli; 2 of these were from floors recently disinfected. From the other 5, gravis strains were readily isolated. In one shelter the dust had previously proved free of diphtheria bacilli after disinfection; the shelter was used during an air-raid the next night and on the following morning the dust contained a large number of gravis organisms.

We have also examined 32 specimens from the floors of the wards of a large children's hospital, part of which was used temporarily for adult patients. From 18 samples, including all those from adults' wards, no diphtheria bacilli were isolated. The remaining 14 samples all yielded diphtheria bacilli: gravis 9, gravis and non-virulent mitis 1, intermedius 2, gravis and intermedius 1, and non-virulent mitis 1. In 11 instances the types bore reasonable relationship to cases or carriers found in the ward before or just after the examination of the dust. In 3 others no cases were known to have been in the ward recently. The diphtheria bacilli were found in 5 general medical wards, 4 isolation cubicles, 2 ear wards, 1 general surgical and 1 unused ward and 1 sick bay for nurses. In 1 ward we were able to isolate diphtheria bacilli (gravis) from the dust on a window ledge.

SURVIVAL OF DIPHTHERIA BACILLI IN DUST

It appears from our evidence that diphtheria bacilli are not usually found in dust except in relatively close proximity to diphtheria cases or carriers; they can, however, persist in a virulent condition in dust for a considerable time. We have stored naturally infected dust in test-tubes in a cupboard, shielded from direct light but not darkened, with the results shown in table I.

TABLE I—SURVIVAL OF DIPHTHERIA BACILLI IN DUST IN VITRO

Sample	First examination		Second examination		Length of survival
	Date	Result	Date	Result	
	1940		1940		
1	Oct. 7	G moderate no., M few	Oct. 14	G numerous	7 days
2	,,	I few	,,	G and I few	
3	,,	G few	,,	G few	
4	Oct. 21	I very numerous	Nov. 22	I (virulent) moderate no.	1 mth
5	,,	G very numerous	Nov. 20	G numerous, I few, both virulent	
6	,,	G very numerous	Dec. 18	G moderate no., virulent	2 mths
7	,,	G numerous, I and M few	Dec. 21	Negative	
8	Oct. 28	G numerous, I few	Dec. 10	G moderate no., virulent	6 wks
			1941		
9	Nov. 12	G numerous	Mar. 3	G few, virulent	102 days
10	Nov. 19	G moderate no.	,,	Negative	

G = gravis, I = intermedius, M = mitis

It will be seen that some organisms survived for over three months and were still virulent. The number seemed to diminish with time, but no accurate counts were made. In samples 7 and 10 it is just possible that there was some antiseptic present, but we cannot be sure of this. Our evidence is not sufficient to indicate that one type survives longer than another. The impression we have is that gravis strains do so, but this may simply be because they tended in these samples to be present in larger numbers than the other types and were the easiest to detect on the plates when present in small numbers among numerous other organisms.

These experiments in test-tubes are a fair approximation to natural conditions but we have by a fortunate accident been able to study the matter still more closely in one ward.

This ward had been used temporarily for cases of diphtheria and from its dust organisms of the gravis type had been isolated in large numbers on many occasions in the course of experiments on the effect of oiling. On Feb. 24, 1941, demands on hospital accommodation required that this ward should be made available for other purposes. Accordingly the diphtheria patients were removed elsewhere; the bed linen was disinfected and sent to the laundry; all washable surfaces of furnishings were washed with 1 in 40 phenol; screens, pillows and mattresses were exposed to formalin vapour in a small room and the ward walls and window ledges were sprayed with formalin and washed. The floors were not specially treated. New patients, none of them suffering from diphtheria, were admitted next day. The floor dust was examined at weekly intervals. Diphtheria bacilli of the gravis type were found in the dust collected one week later (March 2), a moderately large number after a fortnight and again after three weeks (March 10 and 17), and a few, still virulent for guineapigs, on March 25 and 31, five weeks after the diphtheria patients had been removed and the ward "fumigated." On March 25 the nose and throat swabs from all patients and staff in the ward revealed no diphtheria bacilli of the gravis type, one patient provided an avirulent mitis strain

It is evident therefore that virulent bacilli of the gravis type may persist on an oiled floor for at least a month The ward experiment amplifies and confirms the test-tube observations Whether the organisms would persist equally long on an unoiled floor we cannot say

CONTAMINATION OF AIR FROM FLOOR DUST

Two wards were available for studying air contamination; each contained 20–25 patients. All diphtheria types were represented but it was not possible to swab each patient when the dust samples were collected Strict bed isolation was enforced and the nurses wore masks made of two layers of gauze with a strip of Cellophane in a pocket between them, in one ward during all the time they were on duty, in the other only when attending on a patient One ward (L2) had not been oiled but the other (M1) on the day prior to the experiment was treated for the third time with spindle oil as recommended by van den Ende and his colleagues (1940) Six plates of Hoyle's medium were exposed 3 ft from the floor at equal intervals along the middle of the ward for an hour during and after sweeping The sweeping was done from the sides to the middle of the ward and then towards the corridor entrance. Plate 1 was at the corridor end of the ward, plate 6 at the opposite end and the others between The results are given in table II

TABLE II—DIPHTHERIA BACILLI ON PLATES EXPOSED 3 FT FROM GROUND FOR AN HOUR DURING AND AFTER FLOOR SWEEPING

Dust contained	Ward L2 (unoiled)		Ward M1 (oiled)	
	Numerous G, few I		Few G, few I	
Plate	Colonies	*C diphtheriæ*	Colonies	*C diphtheriæ*
1	155	4 G, 2 I	7	0
2	106	0	2	0
3	125	0	4	0
4	58	3 G	9	0
5	81	1 G	10	0
6	30	0	4	0
Total	555	8 G, 2 I	36	0

In the unoiled ward a considerable number of organisms of all kinds rose from the floor and among them some diphtheria bacilli In the oiled ward the air was much less heavily infected and yielded no diphtheria bacilli Further experiments at intervals up to twenty-five days gave similar results In a previous experiment, plates exposed in L2 (unoiled) provided 935 colonies, 24 containing diphtheria bacilli of the gravis type, while those in M1 (oiled twice) yielded 190 colonies, 2 containing gravis-type bacilli The diphtheria bacilli and the other colonies tended to be more numerous towards the door in the unoiled ward but showed this tendency less in oiled wards

Diphtheria bacilli evidently rose into the air during sweeping, and, considering the height at which the plates were placed and the small area exposed (7 sq in per plate), the total number raised at any one sweeping may well be quite large Treatment of the floor with spindle oil appeared to have reduced the number so lifted into the air, two treatments in M1 produced some effect, but a satisfactory result was not obtained till after a third treatment and this maintained its effect for at least twenty-five days, though by this time the number of diphtheria bacilli in the dust was very small All through this series of experiments the number of diphtheria bacilli on the oiled floor was less than on the unoiled floor (L2) The floor of ward L2 was therefore oiled and observations continued till the patients were removed (table III)

One oiling reduced the contaminating effect of sweeping but even three did not completely abolish it We may be certain that the contamination of the air in the last two examinations did, in fact, come from the dust, because there were no patients or staff with positive swabs in the ward at the time The reduction of dust by oiling was evident to the sisters in the ward and reduced greatly the amount of dusting necessary It could readily be seen from the great diminution in fragments of fluff and so on which fell on the plates We have only once seen diphtheria colonies closely associated with such fragments While diphtheria patients were still in ward L2 (unoiled) we were able to demonstrate diphtheria bacilli in the air at times when sweeping was not being done, but in much smaller numbers (table IV)

TABLE III—EFFECT OF OILING THE FLOOR ON THE BACTERIAL CONTENT OF THE AIR

Date of examinations	Treatment of floor	Bacterial content of dust	Bacterial content of air (6 plates) *	
			Colonies	*C diphtheriæ*
Jan 13	Untreated	Numerous G and few M	935	24 G
„ 23	„	Numerous G and moderate no I	555	8 G + 2 I
„ 28	„	Moderate no G and few I	539	7 G + 8 I
Feb 14	After first oiling	Numerous G	232	3 G
„ 20	After second oiling (on Feb 19)	Very numerous G, few I	93	1 G
Mar 2 †	After third oiling (on Feb 24)	Numerous G	78	1 G
„ 17		Moderate no G	137	1 G

* Exposed during sweeping as described above
† All diphtheria patients had left ward by this date

Whether the organisms in the air here came from the floor or not could not be decided but we have tried to determine this in another experiment in a cubicle In this cubicle was one patient with a gravis infection The floor was mopped over with a 50% solution of a proprietary preparation of phenols in an emulsified form (the concentration recommended for washing floors is 1 in 400) After this treatment no diphtheria bacilli were found on the floor during the next three days though there had been large numbers of gravis organisms before Seven hours after a second similar treatment of the floor, 3 plates were exposed for an hour during and after bed-making, on these plates 69 colonies appeared, 2 of them containing the gravis type of diphtheria bacillus The dust from the floor was almost sterile and contained no diphtheria bacilli Five days later, after further similar disinfection of the floor, 2 plates were exposed for two hours during a quiet period before bed-making and 2 others for an hour during and after bed-making During the quiet period the plates collected 14 colonies but no diphtheria bacilli, and during bed-making 96 colonies 2 of them *Corynebacterium diphtheriæ* gravis These organisms must have come from some place other than the dust on the floor, for this was found to contain no diphtheria bacilli It seems highly probable that they came from blanket fluff and not direct from the patient

TABLE IV—BACTERIAL CONTAMINATION OF THE AIR UNDER DIFFERENT CONDITIONS

Date	Conditions	Contamination of air		
		No of plates	Colonies	*C diphtheriæ*
Feb 5	During and after sweeping	6	539	7 G + 8 I
„ 12	During quiet period	3	33	1 G
„ 12	During bed making	3	142	1 G

We have *not* been able to trace the passage of diphtheria bacilli from the floor to the throat of a patient but we made one suggestive observation in an experiment in which 2 nurses wore masks, made of a layer of cellophane between two layers of gauze, while engaged on their duties in the ward during sweeping operations Each mask was dissected after use, the outer layer of gauze being placed in one test-tube, the cellophane in another and the inner layer of gauze in a third Each was covered with broth and well stirred up with a sterile straight wire Direct plating of the broth yielded no diphtheria bacilli, but after incubation for eighteen hours the outer layer of one mask provided a culture of bacilli of the gravis type No diphtheria bacilli grew from any of the other 5 specimens The organisms were thus traced, if not into, at any rate to very near the nurse's nose and throat

The effect of oiling a floor was seen above to be considerable but variable One of our experiments suggests that it may in part be determined by the state of the floor before the oil is applied Two wards (A and B), each containing 10–12 patients, were selected for further oiling experiments Before treatment ward B was thoroughly scrubbed but ward A was not The results of plate exposures during and after sweeping are shown in table v

TABLE V—EFFECT OF THE STATE OF THE FLOOR ON THE BENEFICIAL EFFECT OF OILING

—	Floor dust	Contamination of air during sweeping *	
		Total colonies	Diph colonies
Ward A (oiled)			
Before treatment	Mod no G	98	2 I
After treatment	Mod no G, few I	57	0
Ward B (scrubbed and oiled)			
Before treatment	Very numerous G	91	4G
After treatment	Numerous G	3	0

* 3 plates exposed for an hour during and after sweeping

The number of organisms that rose into the air from the floor which had been scrubbed before oiling was very much less than that from the unscrubbed floor Scrubbing, however, did little to reduce the number of diphtheria bacilli on the floor It seems not improbable that the effect of sweeping may differ with different kinds of dust and that the effect of oiling may vary according to conditions This experiment suggests that a preliminary thorough cleaning of the floor may add to the value of oiling

It is natural to inquire whether bacilli in the dust do, in fact, ever infect persons exposed to them This is difficult to answer but events in ward L2 (table III) are of some interest On Feb 20 gravis and intermedius strains were found in the dust, on March 2, 17 and 25 gravis strains only and on March 31 gravis and intermedius strains The number of intermedius organisms was always small and the failure to find them on three occasions may simply be due to the technique used On March 25 no gravis or intermedius organisms were found in the throat or nose of any patient in the ward On April 8 a patient who had been examined at the previous swabbing developed a nasal discharge from which intermedius organisms were isolated On swabbing the ward again one patient was found to be carrying organisms of the gravis, and another of the intermedius, type Both had yielded negative swabs on the previous occasion and both had been in hospital some weeks Two sources only seemed at all probable the floor or a visitor The floor had been oiled and we had evidence that the number of organisms rising from it was small (table III), but some did rise and it must be remembered that the patients were children and that their toys might fall to the floor and later go to their mouths or noses We think there is a good case for trying to remove the risk which lies in infected dust

DISINFECTION OF FLOOR DUST

Disinfection of rooms or wards previously occupied by patients suffering from diphtheria is part of the ritual of most health authorities and hospital administrations In this city it consists in hospital of what is locally referred to as "stoving" This term in one of our hospitals was explained as meaning "the closing of all windows and doors and spraying of formalin throughout" (quantity per volume not specified) "The place is then left closed for a period varying from two to twelve hours Then the windows and doors are opened for as long as possible" Little or nothing in the way of antiseptic [illegible], washing appears to be practised In another hospital "stoving" means exposure of the small ward and its contents to formalin generated by heat in a proprietary apparatus The method is not used in large wards The corporation disinfecting service which deals with private houses seals all windows, fire places, ventilators and other openings The spraying solution consists of 4 oz of formalin to a gallon of water (2½%), a pint of this is used per 1000 cu ft It is sprayed from a pressure pump (40 lb per sq in), and ceiling, walls, skirtings and floors are given particular attention At the end of the process the door is securely fastened and sealed on the outside A responsible person is advised to keep the room sealed for twenty-four hours if possible, if not, for at least eight hours from the time of disinfection We have made a few observations on the effectiveness of these procedures (table VI)

It is clear that the hospital procedures have been on the whole remarkably ineffective, no doubt partly because of defective technique Observations on the more elaborate ritual for domestic bedrooms are as yet too scanty to report Merely scrubbing a floor, as was noted above, did not greatly reduce the number of diphtheria bacilli in dust In one instance thorough mopping of the floor of an air-raid shelter with a strong solution of Jeyes fluid completely eliminated a very heavy infection of the dust with gravis organisms Similarly, mopping a cubicle floor with a 50% solution of a proprietary preparation containing 40% of phenols destroyed a heavy infection with diphtheria bacilli But a similar disinfectant in a dilution of 1 in 140 (the concentration recommended by the Ministry of Agriculture for use "in stables and kennels") was without effect on a small infection of dust with gravis bacilli on two other ward floors The antiseptic was applied with a mop which was "rubbed out" to near dryness on the floor Incidentally such antiseptics are recommended for use in concentrations of 1 in 400 for washing floors In one ward a moderate infection was eliminated and in another almost eliminated by swabbing with 5% of this antiseptic

TABLE VI—EFFECTIVENESS OF DISINFECTION METHODS

Ward	Diphtheria bacilli in dust	
	Before "stoving"	After "stoving"
N M2	Few G	Few G
N F2	Moderate no G	Moderate no G
Shelter	Few G	None
Cubicle	Moderate no G	Few G
Margins	Not examined	Numerous G, few I
Shelter	"	Numerous G
L2	Numerous G	Numerous G

DISCUSSION

Anything learned about cross-infection in hospital wards, with diphtheria as the special case, should have a direct bearing on the understanding and the prevention of the spread of respiratory infections in general In the past, attention has been riveted on droplet spread, and one has tended to think of this as direct dissemination of infection by means of small droplets through the air from donor to recipient The work of Wells (1934) has produced some refinement of this conception, for he distinguishes between droplets of 0 1 mm or more in diameter, which fall to the ground before they evaporate, and those of smaller size which, evaporating rapidly to form droplet nuclei, may remain suspended in the air for long periods To these nuclei he attributes an important part in the spread of respiratory infection If they are of great importance, prevention becomes a question largely of masking and aerial disinfection But Hare (1940) supports the view that such nuclei are of relatively little importance in streptococcal infections and that it is the larger droplets and the infected milieu round the patient that need most attention Cruickshank (1935) has long stressed the importance of air-borne infection, but the way in which the air becomes infected and the relative importance of the various possible methods are by no means decided

Our own work on diphtheria (Wright et al 1941) has indicated that close contact between patients is an important source of cross-infection, but it also suggests that such procedures as bed isolation while they reduce do not eliminate this trouble The work reported in this paper seems to emphasise still further our previous suggestion that floor dust is often heavily infected with diphtheria bacilli in the neighbourhood of diphtheria patients White (1936) has shown that the same is true of streptococci, and her work has been confirmed by Hare (1941) and Thomas (1941) Moreover the diphtheria organisms may persist and remain virulent there for long periods, they may rise with the dust into the air in large numbers, doubtless may pass to and infect patients, and might well be propelled in the dust for some distance Before the part played by direct aerial transmission can be determined this indirect transmission must be eliminated Treatment and disinfection of floors have been shown to reduce and often to eliminate it, but another source of air contamination is to be found in the bedclothes Direct and indirect transmission are not mutually exclusive, the only question is as to the relative importance of each, and this may undoubtedly differ in different circumstances In our experience indirect transmission, through dust to the air, appears to be predominant but evidence is still incomplete

Disinfection of rooms has tended of recent years to be a ritual handed down to us from the past, with little to recommend it save its antiquity Much that is done in the name of disinfection is in fact ineffective, like other routine procedures it needs checking from time to time Where disinfection is needed it will be necessary to think much of the floor and other exposed surfaces and less of the air, and to use a method which will effectively dispose of a relatively concentrated and persistent focus of infection in the dust There should probably be some use of antiseptic solutions on the floors themselves The treatment of floors with spindle oil (paraffin) is effective in reducing air-contamination from dust, but the best method of application has still to be determined As far as our observations go, important preliminaries are cleaning and, if possible, disinfection The oil itself is, of course, not destructive to bacteria A great help would be an antiseptic with the physical properties of spindle oil which would, as it were, hold the bacteria to itself and in holding destroy them

SUMMARY

Diphtheria bacilli can be isolated in large numbers and in virulent condition from floor dust in the neighbourhood of diphtheria patients They may persist fully virulent in such dust for at least 14 weeks in vitro and 5 weeks on the floor

Disturbance of such dust permits the diphtheria bacilli to rise into the air Treatment of the floors with spindle oil reduces and may entirely eliminate, air-contamination from this source

Current disinfection procedures commonly fail to destroy the diphtheria bacilli in floor dust, for this purpose relatively strong antiseptic solutions appear to be necessary

Dust probably plays an important part in the aerial dissemination of respiratory infections

We wish to thank Mr J R Tucker and Mr A C Dawkins for technical assistance in our observations and experiments, and the various medical officers who have helped us to obtain material for examination

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" the heights reached by Science at the University of Oxford are such that it is difficult, if not impossible, to emphasise any particular one I can only repeat with the Angel of the Apocalypse 'Vidi turbam magnam quam dinumerare nemo poterat' "—Dr MARIANO CASTEX (professor of clinical medicine) in a speech acknowledging the conferment on him of the honorary degree of D Sc by delegates of the chancellor of the University of Oxford in Buenos Aires on Sept 6

MEASUREMENT OF THE HEART IN ANGULAR DEGREES

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IN spite of its limitations, the position of the apex-beat is still our best clinical guide to the size of the heart and a good indicator of its distress inadequacy or overloading It is hoped that the following simple method will make it still more valuable by correlating the size of the heart with that of its owner

The leftward palpable border as a rule agrees nearly enough with the X-ray shadow, but it may be different, especially in enlarged hearts Consequently the apex-beat has ceased to be relied on by those who use radiology Here there seems to be some confusion of thought due to the old belief that the apex-beat did really indicate the heart size Although this is now known to be often erroneous, the clinician can nevertheless obtain useful information as to cardiac distress from the character and location of the apex-beat, as well as from an accurate measure of its size by X rays For instance in effort syndrome, the displacement of the apex-beat reveals an abnormal cardiac action when the X rays show nothing abnormal Moreover, teleradiograms or orthodiagrams can seldom be repeated often enough to guide treatment of an enlarged heart All the clinician has to do is to substitute apparent size for actual size when he takes apex-beat measurements and this I shall do throughout this paper

THE HEART ANGLE

The three main drawbacks to the use of apex-beat measurements are (1) that in children growth soon makes them out of date and valueless, (2) that they do not relate the size of the heart and of its owner, (3) that they provide no normal value applicable to patients of all sizes—the customary normal figure of 3½ in is useless To get over these drawbacks, we may take advantage of the convenient fact that the apex-beat (actually the cardiac impulse) moves, as the heart enlarges, like the end of a clock hand, round an arc of a circle formed by the chest wall (fig 1) Let us take the mid-sternal line as 0° on this semicircle and the mid-axilla as 90° Suppose the chest girth is 32 in, then the mid-axilla is 8 in from the midline and if the apex-beat is 4 in from the midline it will be on the 45° mark on our circle I call this the "heart angle" of that patient This device removes the three drawbacks of the apex-beat, which now relates the size of the heart and its owner, making all hearts comparable, applies equally to growing children and adults, and provides a standard value for normal healthy hearts of any age I find this heart angle averages about 38° When our measurements involve fractions such as $3\frac{3}{4}/8\frac{1}{4}$ in it is not so simple, hence I have devised a calculator chart (suitable for pocket, bag or desk) which does the needful arithmetic (fig 2) If the calculator* is not to hand the angle can be found later, provided you have recorded both the apex-beat and the chest girth

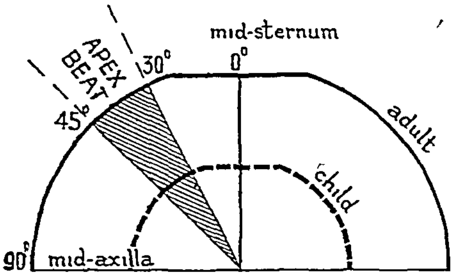

FIG 1—Diagrammatic cross section through front half of the chest in a child and an adult showing normal range of apex beat in both (shaded area)

My procedure is to have the patient sitting or standing if possible I prefer to be on his right so that my right finger-tips can curve round his ribs to locate the *leftmost palpable border* of the heart This point and the midline are marked by two dots with the pen If the casing of the tape measure is passed counter-clockwise the apex-beat and the chest girth can be measured in one operation

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* Obtainable from H K Lewis and Co, 136, Gower Street, W C 1

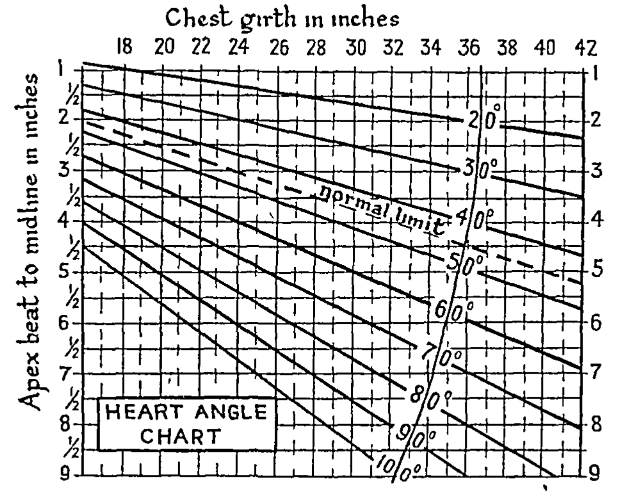

FIG 2 —Chart to calculate heart angles Find on the chart the intersection of the chest girth and apex beat measurements That point will be on or near a ray which denotes the heart angle Intermediate angles can be more easily estimated on the full sized chart

Occasionally, especially in aortic regurgitation, the apex is found in the sixth or seventh space instead of the usual fifth Hitherto I have ignored this downward enlargement, as it occurs in only about 2% of healthy adults, but in special cases it can be measured by the simple device of putting the midline ink mark at the level of the fifth space and the other ink mark over the actual apex-beat The sloping line joining them will be longer than the usual horizontal line and thus increase the heart angle so as to include this downward enlargement in the record Sometimes the patient has to lean horizontally forward or take exercise to make the apex-beat palpable In fat women, where the breast may have to be lifted to feel the apex and measurements will have to be made below the breasts, care must be taken not to displace the marks on the skin

In the enlarging heart X rays show a slightly broader silhouette, whereas the tape measure shows a much larger increment because the enlarging convexity of the heart is expanding towards a concavity in the chest wall, like a cart wheel making contact with a curved depression in the road When palpation fails, I seldom find percussion of much help, but I percuss for high-tension gas below the heart which might be pushing it up and perhaps out

MEASUREMENTS IN HEALTH

First-class lives —At the outset it was necessary to find the normal limits of the heart angle in adults and children The Scottish Life Insurance Society, which rightly insists on the apex-beat being measured, kindly sent me the records of 250 first-class lives examined by doctors all over this country in 1936 All but 30 of these were included between 30° and 40°, which seems the usual limit (range 27° to 44°) Next it was necessary to verify that the chest-girth factor did compensate for the size of the owner of the heart, as assumed in the heart-angle formula Hence I extracted from these statistics the heart angles of all those who departed conspicuously from the normal in build

Type of patient	Heart angles in degrees							Average (degrees)
Short and fat	32	37	28	37	33	32		34 3
	40	31	37	36	37	33		
Tall and thin	38	44	31	35	33	35		36 5
Tall and fat	42	32	33	40				37
Short and thin	40	45	34	38	36	30	35	37
Fat	34	31	34	35	34	32	29	34 5
	42	35	34	37	37			
Tall	27	33	37	32	35	34	30	34
	35	41						

There seems here no indication that extremes of build cause any constant deviation of the heart angle This conclusion is supported by comparing a giant with a little man, both healthy The giant has height 6 ft 5½ in, weight 15 st, chest 38 in, apex-beat 3 5 in from midline, heart angle 33° The little man has height 5 ft 6 in, weight 8 st 5 lb, chest 31 in, apex-beat 2 75 in from midline, heart angle 32°. Hence, although their apex-beats differed by 20%, the chest-girth factor succeeded in awarding the giant and the little man the same heart angle Formerly, in life insurance work, one had almost to guess whether the heart was too large for its owner Henceforth we have a defined standard, so that any heart angle exceeding 45° must be scrutinised

Healthy children —Dr Helen Moffat, assistant school medical officer for the East Riding, kindly measured the heart angle in 86 girls of school age, and found the average to be 34° and the range 30–40°, as in the insured men She also measured the angle in 64 girls and boys of school age and found no difference in the two sexes, the average in this series was 38° and the range 34–41° Infants' heart angles have a rather higher range than the usual 30–40° Evidently the heart angle will be more valuable than the position of the apex-beat in the routine examination of school-children, both for detecting hearts which are too large and for giving a figure which should remain constant in spite of the child's growth

Naval ratings —Dr Eric Lewis kindly measured the heart angle in 200 healthy naval ratings at sea under his care Aided by the calculator, he found it little more trouble to measure the heart angle than to measure the apex-beat in the ordinary way The frequency curve shown in fig 3 made from his figures confirms my previous normal limits of 30–40° Only 5% exceeded 45°, of these ten men, one (48°) was suspected of thyroid over activity and two (52° and 54°) had each had rheumatic fever twice If their heart angles had been measured as recruits they would presumably not have been admitted to the Navy These 200 heart angles will be more reliable than my 250 first-class insurance cases because they were all measured by a single careful physician while the men were at work

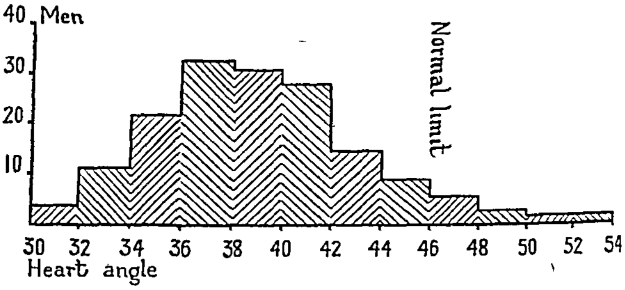

FIG 3 —Frequency curve of heart angles of 198 healthy naval ratings

Labourers —I examined 50 men and 20 lads between sixteen and twenty for admission to a factory They were an uneven sample of the labour market The 20 lads averaged 41 5°, the men 42 6° This bears out my suspicion that labouring work increases the heart angle, as the naval men had averaged 39° Two long-distance runners in this group had heart angles of 48° and 51° In one man the nipple and heart angle were both at 54° In only one man was the heart apex-beat impalpable

CARDIOTHORACIC RATIO AND HEART ANGLE

A teleradiogram should show not only the size of the heart but also the relative widths of the heart and the thorax This is called the cardiothoracic ratio and it relates the width of the heart to the width of the thorax The average cardiothoracic ratio for men is given as 0 48 This corresponds to a heart-angle of 0 48 × 90 = 43°, some 4° higher than the average angle in my figures But the heart angle has the great advantage that depth and width of the chest and apex-beat are measured instead of mere width as in the X-ray method Presumably, deep-chested and shallow-chested people may give different X-ray ratios even if their hearts are normal, and the heart angle is therefore in some respects more useful than the cardiothoracic ratio, as well as being simpler, cheaper, and easier to estimate

ABNORMAL HEART ANGLES

Temporary variations in heart angle are common Thus in my own ambulant or hospital (non-cardiac) cases the angle is often over 40° and may reach 50°, probably from lack of tone In cardiac patients I do not worry about enlargement if the angle is less than 45° Variations of the heart angle in ill health are illustrated by the following cases

Case 1 —An anxious, timid man, aged 30, had six months of nocturnal cardiac pain The heaving, diffuse apex-beat showed a heart angle of 65° when standing but only 52° when lying down The sounds were normal, and the teleradiogram report was "normal, no enlargement" Yet on his next visit seven years later the heart angle had improved to 50° Here the heart angle measured an abnormality which the X rays did not detect, and their disagreement proved a cardiac neurosis

Case 2 —Another civilian effort syndrome patient, aged 25, had a pulse rate of 140 and heart angle of 58°, with a former history of left pleuritic effusion and frequent colds After two months of mainly psychological treatment, the pulse had dropped to 84 and the heart angle to 46° His cardiothoracic ratio before and after his cure was normal (0 44) The discrepancy between these figures (44 ratio and 58°) confirms the diagnosis of effort syndrome, *for after his cure the two* figures approximated, as normally, to 44 ratio and 46° But much more work is needed on these lines

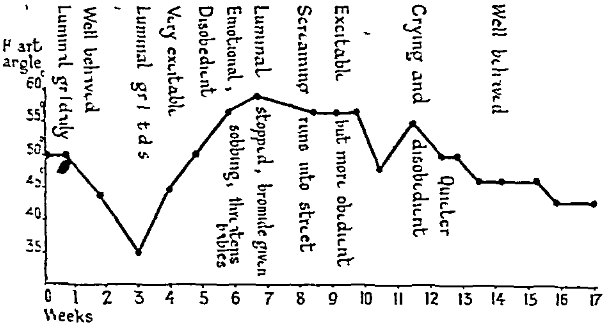

Fig 4 —Heart angles in a boy of 9 years with chorea showing increase in the angle under emotional stress No bruit was audible throughout

Case 3 —A chronic epileptic aged 41 Very healthy and works two allotments In 1937 her heart angle was 40°, pulse rate 140, soon quieting to 80 In 1940 the heart angle was 54°, pulse rate 90 In 1941 she had a fit in my rooms lasting seven minutes, after which her pulse rate was 100 (hard) and heart angle 68° (diffuse) The angle was normal (47) seven weeks later This case illustrates how the beats of a briefly agitated heart may be widely palpable through the overlying lung, and may thus explain the simulated enlargement of the agitated heart in effort syndrome

Case 4 —A boy of 9 had an angle of 47° after six weeks of chorea A mild otitis increased it to 58°, but it returned to 45° in nineteen days This demonstrates that a passing infection may produce a transient increase in the heart angle

Case 5 —An elderly diabetic with high blood pressure (200 mm) had a heart angle of 56° during coma which fell to 35° soon afterwards

Case 6 —A boy of 9 with chorea and an explosive temper had an emotional storm in which his heart angle rose to 57° —a figure not increased when he escaped from the ward and ran 200 yards at top speed His heart angle was charted during seventeen weeks and indicated excitement rather than chorea as the factor causing enlargement (fig 4) Emotional storms in several children with chorea had a remarkable effect in increasing the heart angle

Case 7 —If one has old records of the apex beat of patients whose chest girth has remained constant one can measure their chest girth of today and thus reconstruct their changing heart angles of past years A thin elderly diabetic in 1920 had a heart angle (reconstructed) of 55°, improving after seven years of insulin to 47° in 1930 This slowly increased by 1937 to 75° with heart pains on exertion, and to 87° in 1939 when his legs swelled and he died—illustrating how circulatory decay rather than hyperglycæmia kills elderly diabetics nowadays

Case 8 —A man of 59 had tobacco angina in 1927 with a heart angle of 62° He stopped smoking and his angina vanished till 1938 when he had real anginal attacks, but a normal angle of 43° He died suddenly, aged 70, and the autopsy showed a small thin-walled heart with calcified coronaries Compensatory enlargement could not occur with obstructed blood-supply

Case 9 — A girl of 17 who had rheumatic fever and mitral regurgitation died ten years later with a heart angle which slowly increased to 100° before death A teleradiogram showed only half an inch of lung on each side of her enormous heart At one period her angle of 90° improved to 68° after a short change of air and stayed at about 68° for eleven months (In two other patients I have noticed this heart toning effect of a change of air) It was remarkable what compensatory hypertrophy enabled this plucky girl to do Thus at 78° she enjoyed a week of gentle cycling and sailing and never felt so well

SUMMARY

The position of the apex-beat remains our best clinical guide to the size of the heart and is a sensitive indicator of cardiac distress inadequacy or overloading

The chief drawbacks of the apex-beat to midline measurement are (1) that in growing children it soon becomes valueless (2) that it makes no allowance for the patients' size, and (3) that it provides no normal applicable to all patients, children and adults

It is proposed to measure the leftward size of the heart as an angle The mid-sternal line is taken as 0° and the mid-axillary line as 90° The position of the apex-beat is then expressed as a figure between these two This "heart angle" is calculated by dividing the distance of the apex-beat from the midline by the chest girth and multiplying by 360°, or it can be read off on a simple chart

The angle is not affected by growth it relates heart size to chest size and allows a normal to be laid down

The normal range of the heart angle in health has been found by measurements in 250 life-insurance candidates passed at ordinary rates, 200 naval ratings, 70 labourers, and 140 *school-children* Both in children and adults it lies between 30° and 45° Instances are given of abnormal heart angles in 9 cases

The *method of stating* heart size is quick and easy and should prove useful in life-insurance work fever hospitals and the routine examinations of school-children, as well as for the physician and general practitioner

I am grateful to Sir Thomas Lewis for helpful criticisms and to Dr Maurice Campbell and Dr C G K Thomson for their help

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PROGNOSIS OF CONGENITAL PYLORIC STENOSIS
TREATED WITH EUMYDRIN

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A group of 40 cases of pyloric stenosis, 20 of which have been reported in a previous paper (Dobbs 1939) have been treated with Eumydrin

On admission, each received enough parenteral fluid to relieve existing dehydration Feeds were considerably reduced for the first few days and were preceded on the first day by an oral dose of 1 c cm of a 1 in 10,000 aqueous solution of eumydrin, on subsequent days the dose was gradually increased until 5, 6 or even 7 c cm was given before each feed Each morning the stomach was washed out until the return was clear, and this was done until the morning residue was negligible At the end of the first week or ten days the progress of the case was reviewed and a choice made between further medical treatment or operation If there had been no decisive improvement in the vomiting or the child's general condition, the effects of further medical treatment, or, as Lightwood (1940) has suggested, larger doses of eumydrin were not tried, symptoms were relieved by prompt operation Infants responding to medical treatment were discharged to attend outpatients as soon as vomiting was sufficiently controlled, provided that the mothers were capable of treating them at home

From the results it appears that cases of pyloric stenosis at first indistinguishable one from the other, respond differently to treatment with eumydrin By discharging each child as soon as it was safe to treat him as an outpatient, and by operating at the end of a definite period if he did not improve, the differing response was emphasised—even over-emphasised—and it has been possible to tabulate the cases according to their length of stay in hospital, or, on the other hand, to class them as medical failures On this basis the cases have been analysed to ascertain whether there is any indication of a relationship between presenting ætiological factors and response to treatment

RESULTS

Of 40 cases treated over three years, 33 cases (4 out of 5) were male, 28 were firstborn children, 9 were second born and the remaining 3 were third born, 2 of the firstborn children were one of twins, a first cousin of another child had recently died of pyloric stenosis The average age at onset of vomiting was 3½ weeks, 25 cases were wholly breast-fed at the time of admission, 2 partially breast-fed, and only 5 artificially fed The group of cases, therefore, has those features of age and sex-incidence, position in family, interval of good health and successful breast-feeding before the onset of vomiting which have always been striking in this disease

In all, 27 children *were cured with medical treatment* (table I) and 8 by operation, 1 (case 14) died during medical treatment, and 4 after surgical treatment Of the cases cured medically, 3 were treated from the outset as outpatients, 20 were discharged within three weeks of admission, the remaining 4 being in hospital for over four weeks, 2 cases successfully treated medically had to be readmitted during the course of treatment

CASES CURED MEDICALLY

In table I the 27 cases cured medically have been rearranged in the order of their length of stay, and subdivided into group A (discharged within ten days), group B (discharged within twenty days) and group C (discharged after more than twenty days) Case 5 in group A (because the mother developed pneumonia) and case 17 in group B (because of a transient diarrhœa) were readmitted for further treatment These 2 cases have been classified according to the length of their first stay in hospital because the reason for their second admission was other than a return of the vomiting

The division of the cases into those discharged before, and those after, ten days is made in order that the cases responding to medical treatment almost immediately may be contrasted with those in which response was slower The 4 cases in group C have been separated from those in group B because they remained in hospital so long (over thirty days) and because in 3 of them (cases 1, 6 and 21) the cause of the long stay was other than the persistence of vomiting

Case 1 contracted mild diarrhœa

Case 6 was retained long after cure because of home conditions

Case 21 responded so soon that eumydrin was omitted much too early, with consequent return of symptoms, treatment with eumydrin was begun again, and this prolonged his time in hospital

Case 29 only was kept in because of slow response to medical treatment The symptoms abated gradually and he was discharged after 4½ weeks of treatment

OPERATIONS

In 12 cases (group D) surgery became necessary and Rammstedt's operation was performed, 8 made good recoveries and 4 died (table II) All except 3 (cases 7, 27 and 30) were operated on within two weeks, these 3 had relapsed after the vomiting had apparently been controlled

Case 7 did well in hospital and while breast fed, but relapsed at home when the mother ceased breast feeding him After readmission, vomiting was poorly controlled, and it was soon decided that operation was advisable

Case 27 was treated medically, in hospital and at home, for over four months Vomiting, though never sufficient to prevent a gradual weight increase, was never absent during this time, and peristalsis was persistently seen and a tumour occasionally felt at his visits to outpatients When operation was eventually undertaken a very large and hard tumour was found

Case 36 was discharged on the 6th day, having apparently responded well to treatment In outpatients there was occasional vomiting which was severe enough to necessitate readmission two weeks later Treatment was begun again and up to 5 c cm of eumydrin given, but after two more weeks it was decided to operate Recovery was immediate and uneventful, and the child was discharged six days later

DEATHS

Of the series of 40 cases 5 died, case 14 after 11 days of medical treatment, and the remaining 4 after medical treatment had been suspended and operation had been performed Case 14 has not been included in table I, it has been reported fully elsewhere (Dobbs 1939), and it was concluded that the child died of the effect of several successive large doses of eumydrin given at a time when he was dehydrated Toxic symptoms were otherwise uncommon, though one or two children showed transient flushing and excitement

TABLE I—DETAILS OF 27 CASES SUCCESSFULLY TREATED BY EUMYDRIN, ARRANGED ACCORDING TO LENGTH OF STAY IN HOSPITAL

Case	Sex	Place in family	Days in hosp	Age at onset	Age on admission	Weight change since birth		Max dose eumydrin at each feed	Weeks given
Group A (13 *cases*) In hospital 10 days or less									
				(wks)	(wks)	lb	oz	(c cm)	
24	M	1	0	4	12	+ 1		2 5	6
26	F	1	0	8	10	+ 2	9	3	8
39	M	2	0	6	9	+ 1	2	4	6
33	M	1	5	7	8	+ 1		3	9
34	M	1	5	6	7	+	9	3	10
12	M	1	6	6	8	+ 1	2	5	7
15	M	2	6	4	7	+	5	4	11
4	F	1	7	2	4	−	6	2	9
40	M	3	7	5	6	+ 1	4	2	
28	M	1	8	1	1¼	+	4	3	6
5	M	2	9	6	8	+ 1	4	4	9
18	M	1	9	4	5	+	3	5	15
31	M	1	10	5	6	+ 1	2	3	10
Average				5	7	+	14	3	8
Group B (10 *cases*) In hospital 11–20 days									
9	M	2	13	2¼	4¼	−	8	4	8
11	F	1	13	3	6	−	5	6	10
2	M	2	14	2½	5	−	5	2 5	10
13	M	1	14	5	7¼	±		3	9
32	F	3	14	2¼	5	−	2	5	8
10	M	1	15	2¼	4½	− 3		4	11
16	F	1	15	2	3	− 1	14	6	11
17	M	3	15	2¼	3	+	2	4	12
18	M	1	18	3	4	+ 1	3	5	11
19	M	1	19	3¼	4	±		4 5	14
Average				2¾	4½	−	7½	5	10½
Group C (4 *cases*) In hospital over 30 days									
21	M	2	30	3	7	+ 1	1		12
29	M	1	32	8	9	+ 2	13		12
1	F	1	34	1	3	− 1			13
6	F	1	70	3	6	− 1	2		9

Case 23 was operated on and the duodenal mucosa was penetrated The child developed purulent peritonitis (confirmed at autopsy) and died 24 hours later

Case 35 failed to respond to medical treatment and was operated on thirteen days after admission The operation was successful, but the infant vomited under the anæsthetic When he came round he was found to have massive pulmonary collapse, from which he died three days later At autopsy milk curds were found impacted in the right bronchus, and the right lung was collapsed and œdematous The operation site was satisfactory

The condition of these 2 children at operation was considered to be good, and their deaths represent the operative mortality—that is to say, they succumbed to risks of operation which are present whether there has been previous medical treatment or not Cases 37 and 38 died of gastro-enteritis and are discussed in the next section, they represent the postoperative mortality

TABLE II—DETAILS OF 12 CASES (ALL MALE) OPERATED UPON AFTER EUMYDRIN HAD FAILED

Case	Place in family	Age at onset (weeks)	Length of history (days)	Birth weight	Weight on admission	Weight at operation	Max. dose of eumydrin at each feed (c.cm)	Length of treatment (days)	Reason for operation	Result
				lb oz	lb oz	lb oz				
7	1	3	7	7 4	7 10	7 12	6	27	Relapse	Disch 12 days
8	2	2	7	8 0	7 6	7 6	5	10	Contd vom	Disch 7 wks
20	1	1	1½	8 12	7 6	6 12	7	8	Contd vom, loss of wt	Disch 8 days
22	1	4	14	6 8	6 11	7 1	4	8	Contd vom	Disch 3 wks
23	1	3½	14	8	8 3	8 6	5	8	Contd vom	Death (peritonitis)
25	1	3	14	7	8 5	8 6	5	10	Contd vom	Disch 7 days
27	1	1½	2½	6 6	5 15	8 3	6	105	Relapse	Disch recov 12 days
30	1	4		8	8 12	8 2	4	6	Contd vom, loss of wt	Disch 2 wks
35	1	½	17	7 5	6 11	6 15	7	13	Contd vom	Death (pulm collapse)
36	2	3	17	6	6 10	7 3	5	33	Relapse after disch	Disch 7 days
37	1	1½	24	6 13	6 15½	6 8	4	12	Contd vom	Death (gastro ent)
38	1	4	21	7 12	7 4		5	5	Contd vom	Death (gastro-ent)

INFECTION

The only serious infection that occurred in these cases was gastro-enteritis One child discharged on eumydrin was readmitted after developing loose stools at home There was however, no fever or loss either of weight or well-being and the condition scarcely warranted the label of gastro-enteritis Case 1, and probably case 38 were admitted with gastro-enteritis, and 2 children (cases 21 and 37) developed it while in hospital

CASE 1 was admitted aged 3 weeks, weighing 5 lb His condition was poor and he had frequent loose motions Eumydrin was tried tentatively because the risk of surgery was considered to be too great Vomiting ceased within five days of treatment and the gastro enteritis gradually improved, he was discharged on the 34th day

CASE 21, aged 7 weeks, was treated with eumydrin and developed slight pyrexia and diarrhœa a week after admission The condition was transient and was sufficiently improved for him to be discharged thirty days after admission

CASE 37 failed to respond to medical treatment and Rammstedt's operation was performed on the 13th day Gastro enteritis set in a week later and he died fifteen days after operation

CASE 38 was first seen at five weeks, but the mother refused admission Medical treatment was started two weeks later, it was given only long enough to improve the chances under surgery, and Rammstedt's operation was performed five weeks after admission After operation gastro enteritis set in from which he succumbed eleven days later

DISCUSSION

It is clear from these results that medical treatment with eumydrin will relieve the symptoms of pyloric stenosis in a large number of cases Tables I and II show that over a third (group A) of the cases responded almost immediately and were out of hospital within ten days, and many of them much sooner Another third (group B) had begun to respond towards the end of the first week, and these were out of hospital within three weeks The last third (group D) failed to respond within the stipulated time and were operated on

Two questions present themselves

First, is therapeutic trial the only criterion or are there any features which will differentiate cases that are going to respond easily from those that will need operation? Secondly, would longer medical treatment lead to a greater number of successes, and if so would it be justifiable to keep these infants longer in hospital?

At the first clinical examination there did not appear to be any clinical or ætiological factors on which to base a prognosis for medical treatment On several occasions the vigour of the peristalsis or the size and firmness of the tumour, was commented on and yet the response to treatment was satisfactory, on the other hand some cases who eventually needed operation had on first examination, no palpable tumour and only indefinite peristalsis, and were doubtfully diagnosed as suffering from pyloric stenosis

The ætiological factors and the symptoms as they appear in tables I and II are summarised in table III (omitting group C) From this analysis there emerge one or two significant points In the first place, the 13 infants of group A who responded rapidly, were almost exclusively those who were four weeks old or over when vomiting began (11 out of 13 cases) and who had increased in weight since birth (12 out of 13 cases) Indeed, only 2 other cases in the series of 40 were over four weeks old when their symptoms began The average age for group A at the onset of symptoms is five weeks, at the time of admission seven weeks and they had on an average increased 14 oz since birth These salient points are emphasised by the corresponding figures for the 3 cases who did not need admission the average age of these was six weeks at onset and ten weeks at first examination, and they had all put on over 1 lb since birth These figures contrast sharply with those for the 2 other groups—group B who responded more slowly and group D who were operated on In both these latter groups the average age at onset was less than three weeks and on admission was only 4½ weeks and they had on the whole either not gained or had actually lost weight In group D not one child developed symptoms later than the fourth week of life Two other points may be noted about the infants in group D all were males—and 10 of the 12 were firstborn, whereas of the 27 medically treated cases (groups A, B and C) 7 were female and only 17 firstborn

TABLE III—CASE-HISTORIES COMPARED

—	Av age at onset (wks)	Av age on admission (wks)	Av weight loss or gain since birth (oz)
Group A (disch within 10 days)	5	7	+ 14
Group B (disch within 20 days)	2½	4½	− 7¼
Group D (*treated by* operation)	2½	4½	+ ¼

From the few cases in this series it appears that the children whose symptoms begin comparatively late may be expected to respond rapidly and can probably be safely treated as outpatients, and also that a better response is probable with a female than with a male child About two-thirds of all the cases however, do not fall in this group, yet about half of these responded rapidly enough to be discharged within two or three weeks Radiology gave no help, it was found that the delay in the emptying time of the stomach bore no relation to the results of treatment—a finding in agreement with that of Findlay (1938)

It is hard to say whether longer medical treatment would have led to a greater number of successes because operation was performed empirically at the end of ten to twelve days, but it has already been noted that in case 29 treatment was continued and a response obtained after the third week

Working with both atropine and eumydrin, Svensgaard (1935) and Wallgren (1940) found that almost all their cases eventually responded though in some treatment had to be continued for several weeks, Mackay (1941) also finally got a good response in 35 of her 40 cases On the other hand, in 2 of the present series medical treatment was prolonged (in case 36 for 33 days and case 27 for 3½ months), and yet in both operation was eventually necessary and in both firm tumours were found It would seem, therefore, that though most cases will respond to medical treatment with eumydrin comparatively rapidly, a few will not do so without several weeks of careful inpatient treatment, and occasional ones will eventually need operation

Is the increased stay in hospital, which lengthy medical treatment entails, justified? There has been a gradual improvement in the surgical results, and a few series have been published (Levi 1936, Harris and Keynes 1937) in which the mortality has been less than 5% These results are, however, those of experienced surgeons working under ideal conditions, and there is no question that the usual figure even in reported series is considerably higher The mortality, for instance, in cases admitted to Great Ormond Street Hospital during 1924-30 was consistently 25% or over (Paterson 1931), and it is probable that the average figure up and down the country is even higher The factor of most importance in the mortality is the high incidence of infection, especially gastro-enteritis, following operation Cases *operated on in private have always had a much lower* mortality than hospital cases There were no deaths in Paterson's series of 50 cases operated on in nursing homes by the same surgeons, and cared for by the same physicians, as the cases admitted to Great Ormond Street Hospital Equally good results have been obtained in the hospital class of patient operated on under nursing conditions approaching those found in private (Levi 1936)

As regards this series it is possible to argue that the deaths of cases 37 and 38 could have been avoided by immediate operation and early discharge, but it must be borne in mind that of the 4 cases of gastro-enteritis, 2 (one of whom was admitted with the condition) were medically treated and recovered, and 2 (one of whom had also contracted the condition before admission) were operated on thirteen and five days after admission and died of the infection though the stenosis was relieved The diagnosis and prognosis of gastro-enteritis of infancy is too variable to base any conclusions upon the results of 4 cases, but there is no evidence that operation improved the prognosis when gastro enteritis was encountered The alleged liability of pyloric infants to contract gastro-enteritis is to a certain extent the liability of infants who have been partially starved for a considerable period of time It may also be that an abdominal operation followed by a period during which food intake is minimal likewise greatly increases the susceptibility of infants to contract an infection, and greatly decreases their resistance to it when contracted It is possibly safer to treat medically even those cases admitted to open wards, rather than to expose children to the risks of contracting gastro-enteritis after a debilitating operation

At present gastro-enteritis is the greatest menace to the infants with pyloric stenosis admitted to English hospitals So common is it that these infants have been credited with a constitutional susceptibility to gastro-enteritis, but the facts should reflect less on the child's constitution than on the nursing conditions obtaining in our hospitals And though it is true that skilled surgeons operating on large numbers of hypertropic pyloruses can get good results, yet the effects of surgical intervention continue to appear as a cause of fatalities in the reported cases and are certainly responsible for an appreciable percentage of the deaths from pyloric stenosis

SUMMARY

A series of 40 cases of congenital hypertrophic pyloric stenosis were treated with eumydrin, if response was unsatisfactory within ten days they were operated on

The cases fall into four groups Group A (13 cases) were discharged within ten days, the patients were all four weeks old or more before vomiting started, and all but one had gained over their birth weight on admission

Group B (10 cases) showed some response within ten days and were discharged within three weeks of admission

Group C (4 cases) discharged after thirty days, in 3 of these cases the prolonged stay in hospital was due to causes other than persistence of vomiting

Group D (12 cases) had not responded within ten days and were operated on

No ætiological factors or physical signs distinguished groups B and D from each other, but together they contrasted with the rapidly responding group A, the average ages of the cases in groups B and D, when vomiting started, were 2¾ and 2⅔ weeks, and no child operated on was over four weeks old, there was no loss over the birth weight in most of the cases

The findings suggest that those cases of pyloric stenosis who have not vomited until after the fourth week of life can be safely treated as outpatients and a rapid response may then be expected

Most cases admitted to hospital will, sooner or later respond to medical treatment Since, for a few, medical treatment must be lengthy the relative risks of operation (direct surgical risk and risk of post-operative infection have to be balanced against the risks of a possibly long stay in hospital The risk of a long stay in hospital may, in the long run, prove to be more than counter balanced by the adverse effects of operation on the resistance of these infants to infection

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ALLERGIC REACTION TO LIVER EXTRACT

BY C T ANDREWS, M D Belf, M R C P
PHYSICIAN TO THE ROYAL CORNWALL INFIRMARY TRURO

ALLERGIC symptoms during a course of parenteral administration of liver extract are rare Murphy (1933 states that he saw two reactions in the course of 1000 injections and both seem to have been trivial Bray does not mention the condition, but Schlesinger (1930) has reported three cases, Jones (1939) two, and Engel (1933), Grün (1934), Krantz (1938), Lasch (1936) and others single cases The case here recorded is of interest because the symptoms were severe and it was possible to effect desensitisation

CASE-HISTORY

A woman of 47 was evacuated from London at the end of June and attended the outpatient department of the Royal Cornwall Infirmary on July 6 She had been having treatment for pernicious anæmia for eighteen months and a letter from the hospital which she had attended stated that her maintenance dose was 2 c cm of Examen fortnightly Shortly after her injection in the middle of February she collapsed, but she soon recovered, apparently without treatment, and went home She was persuaded to have a further injection on April 16, as the allergic nature of the symptoms of a month before was not recognised This time the injection of examen produced a severe anaphylactic shock within a few minutes, with fainting, sweating, sickness and diarrhœa, and she became almost pulseless She was given adrenaline and Coramine and was detained in hospital for one night

When I saw her she had had no liver extract for three months and symptoms of anæmia were severe She was short of breath and there was moderate œdema of the legs The blood count was as follows hæmoglobin, 35%, red cells, 1 8 million per c mm, colour index, 1 0, mean diameter, 8 24 μ, white cells, 4800 per c mm (polymorphs 52%, lymphocytes 42%, monocytes 2%, *eosinophils* 2%, *myelocytes* 2%), marked anisocytosis, poikilocytosis, punctate basophilia and polychromasia

DESENSITISATION

In view of the history, it was decided to take the patient into hospital and to use a different brand of liver extract On July 12 I started hypodermic injections of Campolon, beginning with ♏1 and increasing the dose by a minim every half hour When a dose of ♏3 had been reached she complained of itching of the skin and there was slight œdema of the hands and face She was given ♏5 of adrenaline and no further injections that day Next day, the symptoms having disappeared, we started again with ♏1 and worked up as before, but this time with injections spaced at 2-hourly intervals When the ♏5 dose was reached the patient became obviously dyspnœic, her pulse was rapid and almost imperceptible and she had œdema of the face and hands with intense itching and discomfort

It was then decided to attempt desensitisation with one injection daily, and this method was successful, the doses on successive days, beginning July 16, being campolon ♏3, ♏5, ♏7, ♏10, ♏13, ♏17, ♏20, ♏25, ♏35 A daily dose of ♏35 (2 c cm) was continued till the blood count had reached normal On July 27, immediately desensitisation had been completed, the blood count was 2,560,000 per c mm , Hb 50%, C I 1, white cells 4200 per c mm (polymorphs 73%, lymphocytes 20%, monocytes 6%, eosinophils 10%) She had to leave hospital sooner than I wished, but I saw her again on Jan 4 when she was well and said that she had been having 2 c cm of campolon every fortnight since her discharge There had been no recurrence of the allergic symptoms

The following points emerge from a perusal of the literature

1 The allergic state is usually established in a patient who has already had several injections of liver extract without ill effect

2 The exciting factor appears to be the anti-anæmic principle itself and changing the brand of extract has not usually been successful Allergic symptoms have been recorded after Examen, Campolon and Pernæmon

3 A complaint of dyspnœa, faintness or transient urticaria occurring soon after an injection of liver extract is an indication for caution in the administration of the next dose A preliminary skin-test will help to decide whether the patient has become hypersensitive

4 Desensitisation may be effected in some cases and it is usually advisable to start with skin-test doses

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BULBAR PALSY
DUE TO AN ATHEROMATOUS VESSEL

BY

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DISORDERS of cranial nerves due to pressure of atheromatous vessels have been described in connexion with the optic and abducens nerves, but we can find no record of a similar condition affecting the medulla The following case is an example

A man aged 65 was admitted to hospital on Jan 15 with 8 months' history of dysphagia and hoarseness His previous health had been good, with the exception of an attack described as a "slight stroke" 18 months before admission, from this he had recovered completely in a few days He was a wizened man with a mild degree of senile mental change His voice was a hoarse whisper and attempts at swallowing produced much spluttering and coughing His upper cranial nerves were normal, but his palate rose to the right on phonation, his left vocal cord was fixed, and the left half of his tongue was atrophic and deeply furrowed The remainder of his nervous system showed no defect, tendon reflexes being present and equal and plantar responses flexor His brachial and temporal arteries were hard and tortuous and similar changes were seen in his fundi His blood pressure was 210/100 mm Hg and there was a loud to-and-fro murmur over the aortic area There was a chronic dislocation of the right shoulder The Wassermann reaction was negative in the blood and cerebrospinal fluid, the latter showed protein 45 mg per 100 c cm, no excess globulin and 6 cells per c mm On Jan 30 he gradually lapsed into coma and developed signs of bronchopneumonia, from which he died

Autopsy —Severe atheroma was found in all the arteries of the body All three aortic cusps were calcified There was a recent area of cerebral softening in the left parietal region and bronchopneumonia at both lung bases The left vertebral artery was the seat of a fusiform atheromatous dilatation 5 mm in diameter, extending for the length of the medulla All the nerve roots, medial and lateral, arising from the medulla on this side had disappeared Sections of the medulla showed no internal abnormality, microscopic or macroscopic There was no tract degeneration and no area of softening or gliosis We therefore conclude that the atrophy of the nerve-roots, and the consequent paralyses were the direct result of pressure from the atheromatous artery

Our thanks are due to Dr Heward Bell for permission to publish this case, to Dr J St C Elkington for his advice, and to Dr Serge Keys for the post-mortem findings

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MENINGITIS
DUE TO SALMONELLA LONDON

BY

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THE following case of meningitis is recorded because an unusual type of infecting organism was isolated from the cerebrospinal fluid

A warehouseman of 61 was admitted to St Giles' Hospital on Aug 19, 1940 He had suffered from spastic paralysis of the legs for twenty years, for which he had attended the National Hospital, Queen Square His chief complaints had been weakness, pain in the back and severe constipation His left leg was weaker than his right and he could not walk unaided Four days before admission he woke up at night sweating profusely He continued at work the next day but on the third day took to his bed with pains in the legs, vomiting, restlessness and inability to pass water Examination showed considerable wasting and dorsolumbar kyphosis He was comatose and made spasmodic movements of the arms and legs His temperature was 101° F and pulse rate 92 Extreme bilateral atrophy of the quadriceps and hamstrings was present On the left side the plantar response was flexor but on the right extensor The muscles of the arm showed fair tonus and tendon reflexes were present and equal The pupils reacted to light and accommodation He had a right supranuclear facial paresis The urine had to be withdrawn by catheter

On lumbar puncture a very turbid yellow spinal fluid was obtained but the pressure was not increased The result of the examination of the fluid is shown below Treatment was begun with 2 g of M & B 693 Soluble intramuscularly every four hours On the seventh day of his illness the patient was better and he was able to take sulphapyridine by mouth For a time he became more conscious and could respond to those around him in some degree, but on the twelfth day hypostatic pneumonia was detected The patient became moribund and died on the sixteenth day of his illness

Laboratory findings —Cerebrospinal fluid withdrawn soon after admission showed white cells, 4500 per c mm , polymorphs 89%, lymphocytes 9%, endothelial 2%, red cells + + Short gram-negative bacilli in films Total protein 2200 mg per 100 c cm , globulin (Pandy's test) positive, sugar decreased , Wassermann reaction negative

Cultures gave a growth of an organism of the salmonella group which was agglutinated by the patient's serum in a dilution of 1 in 320 and was later identified by Dr W M Scott of the Ministry of Health as being type "London" A similar organism was isolated from three later specimens of the cerebrospinal fluid although the last specimen (obtained on the tenth day) was almost clear It was also isolated post mortem from the gall bladder, ileum and meninges but not from the colon, spleen, liver or heart blood

A specimen of fæces could not be obtained during life Urine showed a few pus cells and red cells From it on culture a few colonies of enterococci and *Bacillus coli* were obtained

Autopsy showed a chronic purulent meningitis mainly over the anterior half of the vertex Middle ears healthy Confluent bronchopneumonia of both lungs with bronchiectasis in left lower lobe Right ventricle dilated and muscle soft Severe atheroma of aorta In the stomach there was a depressed spider scar of an old ulcer and mucous catarrh The intestines showed slight œdema, congestion and mucous catarrh but no ulceration A few false diverticula were present

Histological examinations of post mortem tissues made by Dr A B Bratton showed chronic purulent leptomeningitis over the cerebral cortex Congestion and slight glial proliferation near vessels in the basal ganglia Lungs showed early organisation of bronchopneumonia and slight heart failure change Cloudy swelling of liver and congestion of centres of lobules, congestion and slight chronic inflammatory reaction in spleen, congestion and cloudy swelling of kidney Slight chronic ileitis

Since the organism concerned in this case was grown from the gall-bladder and from the ileum, which also showed some histological evidence of inflammation, it seems probable that the meningitis was a blood borne infection from the alimentary tract

Dr W Allen Daley, medical officer of health to the London County Council, has given us permission to describe this case We wish to thank Mr R J Holt, laboratory technician, for his help

Reviews of Books

An X-Ray Atlas of Silicosis

By A J Amor, M D Lond, M Sc Wales, medical officer to Mond Nickel Co, Swansea Bristol John Wright and Sons Pp 206 30*s*

The main body of this book consists of radiograms of the chest in silicosis, facing which are case-notes in English and French The plates in the earlier part of the book show non-specific and typical specific changes, those in the next sections silico-tuberculosis and acute silicosis The special X-ray features of silicosis in various industries are then illustrated, and after a section on further complications the differential diagnosis is described and illustrated The radiograms are preceded and interspersed with general explanatory matter on the ætiology, pathology, radiology and clinical manifestations of silicosis In a foreword Sir Wilson Jameson recommends the book for industrial medical officers, and as a short practical book on this protean disease it is excellent The reproduction of the plates is successful except, as might be expected, for the lighter changes grouped as non-specific, to which enlargements or drawings might have been added with advantage The case-notes are precise and instructive, and the author has succeeded, in spite of the controversial nature and many unsolved problems of silicosis, in maintaining a balance representing the consensus of present opinion The social aspects, too, have not been overlooked, thus it is pointed out that the existing compensation laws are such that the silicotic who is incapacitated for work is immediately placed in an economic state which brings his standard of living close to the starvation line, with a resulting increased liability to tuberculosis Drawbacks to the book are mainly the outcome of condensation, which entails somewhat dogmatic presentation Thus the remark that "there is certainly no sound reason for believing that tuberculous infection of the lung is modified in any beneficial manner by the presence of coal dust" does not take into account Prof Lyle Cummins's experiments on the adsorption of tuberculin by coal dust Nor is it accurate to say that the belief (based on the Registrar-General's returns) that pulmonary tuberculosis in the coal-mining industry is less common than among the general population has proved fallacious The most recent figures confirm the low tuberculosis mortality for miners of bituminous coal —the great majority of British miners—but not for anthracite miners presumably because of the latter's high incidence of silicosis

The atlas is a fine achievement which can be strongly recommended for postgraduate students

Personality and Mental Illness

By John Bowlby, M D Camb London Kegan Paul, Trench, Trubner and Co Pp 280 10*s* 6*d*

Dr Bowlby has written a provocative book, distinguishing from a long list of character traits commonly observed in psychiatric patients 33 which he regards as specifically schizoid and 72 which he thinks are non-specific The latter are distributed among both depressive and schizoid personalities His work has admittedly been on a small group of cases, but he claims no more for it than that it should stimulate others to record others of kind Only in this way does he see establishing sounder methods of such reactions He rejects as artificial suggested by Jung, into extraversion and in so doing pays tribute to the [illegible] observations of Kretschmer similar observations on normal people, as psychopaths, neurotics and recorded, so that in follow-up studies the patient's early history, and his re Perhaps, in the light of this study, such reveal the character traits relating breakdown which he has experienced

Bowlby agrees with Lewis in seeking and fast distinctions between the neuro study of his own cases leads him to that division is not into manic-dep schizophrenia, much less into neuro His classification follows Bleuler in schizoid from the syntonic personality subdivides both according to Cattell's subm gent, the out-going active and and desur action respectively Thus, his sive type of personalities includes among the of schizoid pers solitary and apathetic as "the saint-like, cold group the hysterical and and in the surgent The difficulty with any antisocial schizoids pts such grouping classification which attem personal judgment borderline case, in which of anxiety state ultimately decide on a label faces the depressive state, and Bowl fication can't frankly, admitting that no ible and tight What he does is to a standing cases in such a way that the o such as traits are recognised and related to pathological and distortions as may be regarded ed in the suggests that if every case was revi take up whether "he is syntonic or schizoid in more would become more reliable, treatment "The and psychopathology more scientific" far more than reassemble for the reader on psychological types, it contains much critical observation, checked by a careful Bowlby's own detailed case-histories

Architecture of the Kidney in Chronic Bri

By Jean Oliver, professor of pathology, Long Isl of Medicine New York Paul B Hoeber Pp 256

The complicated structure of the kidney has nat led to the suggestion that the different parts p specialised and different functions Unlike organs as the liver, in which each cell can perform indep every function of the organ, the kidney is compo complete units differing widely in their histo appearance and structure Function and structure the normal kidney have been correlated sufficiently provide a reasonable theory of the mechanism of n kidney function Prof Jean Oliver extends this meth to the domain of pathology and provides an excelle description and review of the histological renal c which are found in the kidneys of chronic Brigh disease He has carried out much of the work and several of the original views expressed are ba on careful and painstaking investigation He evidence to show that the aglomerular nephrons seen in specimens of diseased kidneys are, at least to extent, capable of replacing functionally the destroye glomeruli, and that, in a sense, regeneration of functio tissue thus takes place in the diseased organ He als shows that new vessels may arise in disease to suppl the tubules so that they no longer depend on an inta glomerulus for their blood-supply The effect of physica blockage in the distal part of the nephron and its effe on structure is well brought out His methods in delicate experimental work were already known to some of us here, they are set out fully for those who wish to study them The many illustrations include microdissections and photomicrographs of normal and diseased kidneys Professor Oliver admits that the story of function and structure is still far from complete, but he has done much to clear the way for further study The book is brimful of observations and suggestions

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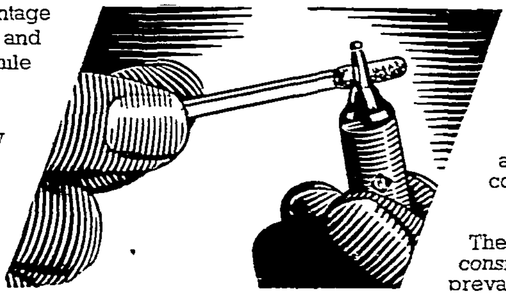

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Histological examinations of post mortem tissues made by Dr A B Bratton showed chronic purulent leptomeningitis over the cerebral cortex Congestion and slight glial proliferation near vessels in the basal ganglia Lungs showed early organisation of bronchopneumonia and slight heart failure change Cloudy swelling of liver and congestion of centres of lobules, congestion and slight chronic inflammatory reaction in spleen, congestion and cloudy swelling of kidney Slight chronic ileitis

Since the organism concerned in this case was grown from the gall-bladder and from the ileum, which also showed some histological evidence of inflammation, it seems probable that the meningitis was a blood-borne infection from the alimentary tract.

Dr W Allen Daley, medical officer of health to the London County Council, has given us permission to describe this case We wish to thank Mr R J Holt, laboratory technician, for his help

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Reviews of Books

An X-Ray Atlas of Silicosis

By A J Amor, M D Lond, M Sc Wales, medical officer to Mond Nickel Co, Swansea Bristol John Wright and Sons Pp 206 30*s*

The main body of this book consists of radiograms of the chest in silicosis, facing which are case-notes in English and French The plates in the earlier part of the book show non-specific and typical specific changes, those in the next sections silico-tuberculosis and acute silicosis The special X-ray features of silicosis in various industries are then illustrated, and after a section on further complications the differential diagnosis is described and illustrated The radiograms are preceded and interspersed with general explanatory matter on the ætiology, pathology, radiology and clinical manifestations of silicosis In a foreword Sir Wilson Jameson recommends the book for industrial medical officers, and as a short practical book on this protean disease it is excellent The reproduction of the plates is successful except, as might be expected, for the lighter changes grouped as non-specific, to which enlargements or drawings might have been added with advantage The case-notes are precise and instructive, and the author has succeeded, in spite of the controversial nature and many unsolved problems of silicosis, in maintaining a balance representing the consensus of present opinion The social aspects, too, have not been overlooked, thus it is pointed out that the existing compensation laws are such that the silicotic who is incapacitated for work is immediately placed in an economic state which brings his standard of living close to the starvation line, with a resulting increased liability to tuberculosis Drawbacks to the book are mainly the outcome of condensation, which entails somewhat dogmatic presentation Thus the remark that "there is certainly no sound reason for believing that tuberculous infection of the lung is modified in any beneficial manner by the presence of coal dust" does not take into account Prof Lyle Cummins's experiments on the adsorption of tuberculin by coal dust Nor is it accurate to say that the belief (based on the Registrar-General's returns) that pulmonary tuberculosis in the coal-mining industry is less common than among the general population has proved fallacious The most recent figures confirm the low tuberculosis mortality for miners of bituminous coal —the great majority of British miners—but not for anthracite miners presumably because of the latter's high incidence of silicosis

The atlas is a fine achievement which can be strongly recommended for postgraduate students

Personality and Mental Illness

By John Bowlby, M D Camb London Kegan Paul, Trench, Trubner and Co Pp 280 10*s* 6*d*

Dr Bowlby has written a provocative book, distinguishing from a long list of character traits commonly observed in psychiatric patients 33 which he regards as specifically schizoid and 72 which he thinks are non-specific The latter are distributed among both depressive and schizoid personalities His work has admittedly been on a small group of cases, but he claims no more for it than that it should stimulate others to record observations of a similar kind Only in this way does he see a likelihood of establishing sounder methods of recognising and avoiding such reactions He rejects as artificial the separation, suggested by Jung, into extraversion and introversion, and in so doing pays tribute to the careful and accurately worded observations of Kretschmer His plea is that similar observations on normal people, as well as so called psychopaths, neurotics and psychotics, should be recorded, so that in follow-up studies use may be made of the patient's early history, and his reactions prior to illness Perhaps, in the light of this study, such records would reveal the character traits relating directly to the type of breakdown which he has experienced

Bowlby agrees with Lewis in seeking to abolish hard and fast distinctions between the neuroses and psychoses, study of his own cases leads him to conclude that the great division is not into manic-depressive illness and schizophrenia, much less into neurosis and psychosis His classification follows Bleuler in separating off the schizoid from the syntonic personality and he then subdivides both according to Cattell's grouping of surgent and desurgent, the out-going active and in-turned passive type of reaction respectively Thus, his sub grouping of schizoid personalities includes among the desurgent "the saint-like, cold solitary and apathetic asocial" types, and in the surgent group the hysterical and shameless antisocial schizoids The difficulty with any system of classification which attempts such grouping lies in the borderline case, in which personal judgment would ultimately decide on a label of anxiety state as against depressive state, and Bowlby faces this difficulty frankly, admitting that no classification can be water tight What he does is to assemble and regroup his cases in such a way that the outstanding personality traits are recognised and related to such accentuations and distortions as may be regarded as pathological He suggests that if every case was reviewed in the light of whether "he is syntonic or schizoid in make-up, prognosis would become more reliable, treatment more intelligent and psychopathology more scientific" The book does far more than reassemble for the reader the earlier work on psychological types, it contains much shrewd and critical observation, checked by a careful study of Dr Bowlby's own detailed case-histories

Architecture of the Kidney in Chronic Bright's Disease

By Jean Oliver, professor of pathology, Long Island College of Medicine New York Paul B Hoeber Pp 256 $10

The complicated structure of the kidney has naturally led to the suggestion that the different parts possess such specialised and different functions Unlike organs such as the liver, in which each cell can perform independently every function of the organ, the kidney is composed of complete units differing widely in their histological appearance and structure Function and structure in the normal kidney have been correlated sufficiently to provide a reasonable theory of the mechanism of n kidney function Prof Jean Oliver extends this me to the domain of pathology and provides an excellen description and review of the histological renal chang which are found in the kidneys of chronic Brigh disease He has carried out much of the work him and several of the original views expressed are on careful and painstaking investigation He quot evidence to show that the aglomerular nephrons o seen in specimens of diseased kidneys are, at least to s extent, capable of replacing functionally the destroye glomeruli, and that, in a sense, regeneration of function tissue thus takes place in the diseased organ He als shows that new vessels may arise in disease to sup the tubules so that they no longer depend on an inta glomerulus for their blood-supply The effect of p blockage in the distal part of the nephron and its eff on structure is well brought out His methods in delicat experimental work were already known to some of us here, they are set out fully for those who wish to study them The many illustrations include microdissections and photomicrographs of normal and diseased kidneys Professor Oliver admits that the story of function and structure is still far from complete, but he has done much to clear the way for further study The book is brimful of observations and suggestions

THE LANCET

LONDON SATURDAY, MAY 24, 1941

PAROXYSMAL HÆMOGLOBINURIA

Paroxysmal hæmoglobinuria is especially associated with primary hæmolytic anæmias and with blackwater fever Research into these diseases has been pursued independently on the whole, since the primary hæmolytic anæmias occur mostly in temperate climates while blackwater fever is limited to malarial zones, the results taken together, however, suggest a close relationship Hæmoglobinuria results when sudden intravascular lysis of red cells releases free hæmoglobin into the plasma in amounts sufficient to exceed the renal threshold The effects of injecting hæmoglobin solutions freed from red-cell stroma substance into the blood-stream have been followed in experiments by Fairley[1] and by Gilligan and his colleagues[2], the results show that hæmoglobin appears in the urine when the free hæmoglobin in the plasma exceeds 100–140 mg per 100 c cm Only about a tenth of the released hæmoglobin is so excreted, the rest disappears—devoured by reticulo-endothelial cells or metabolised into other blood pigments The presence of hæmoglobinuria is thus a sign of considerable intravascular hæmolysis In outline this account of the production of hæmoglobinuria fits all cases, whatever the initial cause, with the possible exception of "march hæmoglobinuria" which may be due to local renal hæmorrhages

The question at issue then is, what causes the intravascular hæmolysis that liberates free hæmoglobin into the plasma ? The paroxysmal hæmoglobinuria of blackwater fever is associated with repeated attacks of, or continuous infection by, subtertian malaria A connexion had been noted between quinine treatment of the malaria and the onset of hæmoglobinuria, and Ponder and Abels[3] found that when quinine was given to rabbits the red blood-cells became less resistant to the lytic action in vitro of substances like the bile salt, sodium taurocholate Quinine itself, in concentrations similar to those prevailing in the blood was not hæmolytic and hence they thought that quinine acted by accelerating the action of intravascular lysins Mer and his colleagues[4] confirmed this by showing that the red cells of malarial patients were rendered more sensitive to lysis by bile when quinine was given Fairley and Murgatroyd[5] had a patient with mild blackwater fever in whom they observed that the accelerating effect of quinine was related to the activity of the malarial parasites, when the malaria was inactive, hæmoglobinuria was not brought on by giving quinine Quinine is clearly not the primary cause of attacks of blackwater fever, the disease occurs in patients treated with Atebrin and Plasmoquine, and Connal[6] recorded that mortality among regular quinine takers was only half of that among the "seldom takers"

In 1937 Fairley and Bromfield[7] described the formation of a new pigment in the plasma of blackwater-fever patients which they called pseudomethæmoglobin—a name later altered in the light of more precise knowledge to methæmalbumin They thought that methæmalbumin was peculiar to blackwater fever and suggested that there was a metabolic disturbance due to the malarial infection that led to lysis of the red blood-cells with formation of this special pigment Later, however, it was found[1] that methæmalbumin appeared in human plasma after any hæmolytic event Fairley[8] then proposed another explanation that chronic malaria leads to hypertrophy of the reticulo-endothelial cells and a pathological increase of their normal phagocytic functions, including erythrocyte destruction He postulates an intracellular lysin or enzyme normally responsible for the destruction of aged erythrocytes ; in chronic malaria formation of this lysin is increased and it is liberated into the circulation, where it becomes fixed at once to the red cells, chronic overflow accounts for the hæmolytic anæmia, sudden liberation in large amounts leads to the severe hæmoglobinæmia and the consequent hæmoglobinuria of blackwater fever Several supporting points for this attractive theory can be derived from researches on the primary hæmolytic anæmias In paroxysmal nocturnal hæmoglobinuria, hæmolysins which cause a parallel syndrome have been identified and their properties studied In the patient described by Dacie, Israëls, and Wilkinson[9] the hæmolysin was most active when the reaction of the blood was rather more alkaline than usual, so that only during the night was the hæmoglobin in the plasma raised sufficiently to overstep the renal threshold and cause hæmoglobinuria, but the steady drain led to a chronic hæmolytic anæmia Hypertrophy of the splenic histiocytes has been the characteristic feature of groups of adult patients with hæmolytic anæmia reported by several workers, some of them had paroxysmal hæmoglobinuria and thus only differed from Fairley's cases in the absence of a known agent causing the reticulo-endothelial hypertrophy

During the last few years most work on the primary hæmolytic anæmias has emphasised such changes in the red cells as spherocytosis and increased fragility, but, though some observers have thought that these were primary, current opinion now regards them as secondary to the hæmolytic process, and again results from blackwater-fever patients agree[5] The work of Dameshek and Schwarz[10] again brought up the question of hæmolysins as the cause of these primary hæmolytic anæmias, but in most of their patients no hæmolysin could be found They accounted for this by pointing out that relatively large concentra-

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[1] Fairley N H *Brit med J* 1940 2 213

[2] Gilligan D R, Altschule M D and Katersky E M *J clin Invest* March, 1941 p 177

[3] Ponder E and Abels I C *Proc Soc exp Biol* N Y 1936 34, 162

[4] Mer G Birnbaum D and Kligler I J *Trans R Soc trop Med* March 1941, p 373

[5] Fairley N H and Murgatroyd, F *Ibid* 1940, 34, 187.

[6] Connal quoted by P Manson Bahr in Manson's Tropical Diseases, London, 1940 p 86

[7] Fairley N H and Bromfield R J *Trans R Soc trop Med* 1937, 31 139

[8] Fairley N H *Ibid*, 1940 34 173

[9] Dacie J V Israëls, M C G and Wilkinson, J F *Lancet*, 1938, 1 479

[10] See *Lancet*, 1940 2, 73

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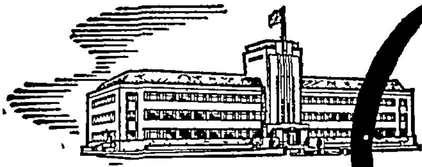

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EUMYDRIN IN CONGENITAL PYLORIC STENOSIS

THE relative merits of surgery and medicine in the treatment of congenital pyloric stenosis have been hotly debated for years and the medical protagonists, who have been getting the worst of it, will take fresh heart from the reports of DOBBS[1] (in this issue) and of MACKAY[2] on their experience with Eumydrin (atropine methyl nitrate) The use of this drug which has about half the antispasmodic action and a fiftieth of the toxicity of atropine, was originally suggested by USENER some fifteen years ago In 1935 SVENSGAARD[3] of Copenhagen compared her results in 61 cases treated with eumydrin with those of surgery and of medical treatment with atropine, she concluded that eumydrin was more effective and less toxic than atropine, but that either gave better results than surgery There was only one death in her eumydrin series, but later workers in Britain, Sweden and Germany have been less fortunate DOBBS and MACKAY have each treated 40 cases and each had 5 deaths—a fatality of 12 5% Compared with this, THOMPSON and GAISFORD[4] treated 209 cases surgically mostly in hospital with a fatality of 13 4% RAMMSTEDT himself, on the other hand, had only 2 deaths in 60 cases operated on, but few others have been as successful as this except in private practice, where the danger of intercurrent infection can be largely eliminated Moreover such reports have come from surgeons with exceptional experience working in close coöperation with the pædiatrician Pyloric stenosis is not so common that every surgeon can be expert in Rammstedt's operation, a short but ticklish one, and this consideration must increase the value of a medical method by which infants living out of the reach of skilled teamwork can be cured

The technique of eumydrin treatment is not yet settled Daily gastric lavage is given as a routine by DOBBS, but MACKAY and SVENSGAARD think washouts unnecessary DOBBS advises small feeds to begin with, gradually working up to an adequate diet, as after operation, but MACKAY was equally successful with three-hourly feeds from the start, only slightly reducing their strength for the first few days It is essential in these children to overcome dehydration as quickly as possible, for serious intoxication may result from giving eumydrin to a dehydrated child, and DOBBS gives subcutaneous salines until there is a satisfactory passage of urine But MACKAY is convinced that too high a fluid intake reduces both the effectiveness of the drug and the baby's appetite, and probably accounted for some of her failures except while there is obvious dehydration she therefore advises fluids by mouth only and limits them to 3 oz per pound body-weight in the first 24 hours and thereafter gives only as much as the baby really wants The eumydrin, one part in 10,000 of water, is given half an hour before each feed, beginning with 0 5–1 c cm and increasing to 2 5–3 c cm Toxic symptoms, though less common than with atropine, do arise, especially fever and abdominal distension and must be an indication for omitting at least one dose of the drug The watery solution of eumydrin does not keep well, and must be freshly made each week This last difficulty is overcome in WALLGREN'S[5] method for he uses a 0 6% alcoholic solution which is stable This solution is given in drop doses on the tongue, and is said to be both less toxic and more effective, it need only be given once or twice a day DOBBS reviews each case at the end of a week or ten days and if there is no decisive improvement an operation is done promptly

It is not yet possible to tell when the baby is first seen whether it should be operated on without delay or whether eumydrin is likely to be successful DOBBS got his best results in infants who were over four weeks old when projectile vomiting began especially when they had gained on their birth-weight Presumably however, these are the cases which will do well with any treatment In deciding between surgery and medicine the doctor has to balance the risks of operation against those of a long stay in hospital, for in skilled surgical hands the child may be fit to leave hospital within 7–10 days, whereas a child treated medically may have to stay some weeks, the average stay in MACKAY'S successful cases was 4 weeks In Scandinavia the risks of cross-infection in children's wards seem largely to have been overcome, but here this is only so in the rare hospitals where each baby can have a separate cubicle There, too, children's nurses seem to be more plentiful It seems, then, that eumydrin will have its greatest application in the milder cases which can be treated as outpatients, in the older cases which are not likely to be long in recovering, and in those circumstances where strict isolation is possible with a generous provision of nurses

MEDICAL PLANNING COMMISSION

SIXTY-ONE of the 67 members of the Medical Planning Commission met on May 7 to discuss scope and procedure Mr H S SOUTTAR unanimously elected to the chair, said its aim was to provide every member of the community whatever his economic status with all necessary medical resources, while maintaining the close personal relation between doctor and patient The whole resources of the B M A were at its disposal but the commission was an entirely free body, not bound by any preconceived policy Lord DAWSON (whose own proposals were pigeon-holed in 1920) emphasised the degree to which medical knowledge had outstripped the organisation of the practice of medicine Inevitably the practice of medicine was becoming more and more institutional and they must apply collectivism to the fabric without sacrificing individualism in the human relationship It was only recently that constructive health had really become part of medical thought Mr SOMERVILLE HASTINGS commended starting with a survey of the various fields, expediency to come first and principles of organisation last On this common basis of agreement the commission became severely practical and set up five committees to deal with general practice, special practice public health, hospitals, and teaching hospitals (including clinical education), with a sixth committee to integrate their reports Each of these committees is at liberty, with the authorisation of the chairman to coöpt up to four additional members But there is to be no further sectional representation except the addition of the chairman of the Nuffield Medical Advisory Committee and four general practitioners (one from a colliery area) to be chosen by the Insurance Acts Committee tions of hæmolysin are necessary for demonstration in vitro and that the occurrence of spherocytosis and similar changes in the red cells is indirect evidence of their presence The sceptic may say that there is little to choose between a circulating hæmolysin, present in subdemonstrable concentrations, and an intracellular lysin that if liberated is fixed at once—the presence of either being only inferable from secondary changes in the blood-cells Both suggestions seem to have more than their fair share of speculation, and they take no account of lysolecithin, the effect of stasis of blood in the spleen, and other points which have been raised in this connexion But it is encouraging that the students of primary hæmolytic anæmias and of blackwater fever should have reached similar conclusions about the cause of these diseases Pooling the results of research on all hæmolytic anæmias, temperate and *tropical*, should produce further advances

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[1] See also *Lancet* 1939, 1, 12

[2] Mackay H M M *Arch Dis Childh* March 1941, p 1

[3] Svensgaard E *Ibid* 1935 10 443

[4] Thompson W A and Gaisford W F *Brit med J* 1935, 2, 1057

[5] Wallgren A *Arch Dis Childh* 1940 15 103

THE PHYSICIAN AS COMFORTER

THE commonest motives that send patients to their doctors are pain and fear They teach us much in the schools about pain, its mechanism, its diagnostic significance, how it may be relieved, but less of fears and anxieties, the forms they take, how they may be uncovered in their hiding places, and how removed They leave it to our native wit and sympathy to learn the ways of fear as we gather our experience of sick and healthy humanity Yet a little guidance would make many of us better doctors Prof J A. RYLE, in a recent clinical lecture at Guy's Hospital,[1] commented on those unfounded fears of disease which often give rise to puzzling symptoms unassociated with physical signs and which he calls nosophobias They range from grossly obsessional phobias, often syphilophobia, which are deep-seated in psychoneurotic personalities, to that exaggerated but superficial fear which often provokes a doctor or a medical student to dread some serious cause for a trivial symptom in himself or a relative They include the fears of heart disease, of high blood-pressure, of pulmonary tuberculosis and the like, engendered either by unwise talk and excessive examination on the doctor's part, or by the patient's recent experience of these conditions in relatives or friends Cancer phobias are common, because the lay mind thinks of cancer as bringing a long and painful illness with an inevitably fatal end, yet many forms of cancer are now curable, if treated early, and many cancer patients escape great pain But the disease is grave enough, and it is little wonder that fear dominates the mind of a patient who has recently seen painful cancer in another and now himself experiences an apparently similar pain The doctor must examine such patients thoroughly, and understand their phobia sympathetically—he must find his way into the patient's mind, and appreciate what mixture lies there of knowledge, ignorance and apprehension—then his confident reassurance will cure them There lies before the profession a two-fold task to teach the intelligent public the facts of physiology and medicine in better perspective, counteracting fussy apprehension among the half-informed, and to undertake with greater understanding the doctor's task as comforter It were well that the medical student should be taught to begin his interrogation with "What are you complaining of? And what are you afraid of?"

The physician as comforter is the theme of a little group of essays[2] which Ryle has added to his widely read paper "On Death and Dying" Death is more imminent than usual in these days, and the fear of death perhaps more prevalent Yet the process of dying, so far as its closest observer, the medical man, can judge, is only exceptionally a painful or unpleasant one Like the fear of death, the fear of pain is commonly exaggerated in the lay mind The air-raid casualty wards of this war, like the casualty clearing stations of the last, have been filled with broken bodies and mangled flesh, yet most of the injured lie still and quiet, a few only show signs or have recollection of suffering much pain Couple that observation with an understanding of the biological significance of pain in signalling disorder and enforcing rest, and the reasonable man will no longer dread it, but will dwell rather on his own good chance of escaping it, or will hope, with medical aid, to endure it bravely Even fear itself can be shown, in the bodily reactions of animals, to have a biological "purpose", it accompanies, and in reasoning man it may even be said to provoke, actions that avoid or withstand danger and aid preservation But in unreasoning man fears may be liars, when they are superstitious, when they are exaggerated by ignorance, or when they become epidemic as panic More knowledge of the objects of fear, and some appreciation of its biological genesis, will make it a good servant instead of a bad master

The physician cannot advise others how to behave in difficult situations without having some working idea as to the pattern and purpose of human life Ryle is no mechanist, he sees more in life than can be compassed by physics and chemistry, and holds that the doctor's modern scientific training leads to a study of man which is too narrow and too objective The scientific approach should form merely a part of a wider study of man as a whole and in his environment, in the spirit of the naturalist school, deriving from HIPPOCRATES, which "has always based its doctrine on close observation and that intimate form of human understanding which is best conveyed by the Greek word sympathy" Between the purely materialist and the devoutly religious philosophies, Ryle stands intermediate, as a naturalist and humanist For him, man has an allotted task to fulfil—that of using his gifts of body and mind to the utmost and the best of which they are capable Ryle finds implicit in nature and human society a principle of mutual aid, which should be an important ingredient of effective living, and should teach modern science that it has social and moral as well as academic functions The principle sounds like brotherly love under another name, if so it helps to bear out the thesis that the ultimate sanctions of religion lie in human and natural experience Indeed, when the physician as scientist turns into the physician as comforter, he assists in the dialectic process whereby science and religion, last century in antithesis, are in this moving towards synthesis types of malignant disease can be undertaken again at once At the present time facilities for radiotherapy are greatly reduced though the demand for this form of treatment is considerable

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[1] *Guy's Hosp Gaz* April 5, 1941, p 76

[2] Fears may be Liars London *Allen and Unwin* Pp 95 3s 6d

Only inpatients will be taken, for the most part air-raid casualties and civilian sick from Guy's and its outpatient waiting-list It may be possible to run a daily ambulance service between the hospital and the Borough, and for this purpose an American ambulance, presented some months ago by friends of the hospital in New York, will be of great service Staffing an annexe 25 miles out of London presents difficulties, but fortunately there are members of the Guy's staff attached to and living in or near the local county hospitals, and a young surgeon of experience has been appointed as R M O The annexe is unfortunately too small to house en a fraction of the medical school, but some members the staff will take their students down to the hospital r teaching rounds so that it will play a part, though a all one, in medical education

MENINGOCOCCI IN THE PHARYNX

FROM observation of cases of cerebrospinal fever in the E F in France, van Rooyen and Morris[1] conclude that eatment with sulphapyridine is highly satisfactory— 200 consecutive cases in young soldiers only 3 were tal In convalescents on the eve of their discharge om hospital meningococci were isolated from the harynx in only 3 cases out of 113, and those may well ave been reinfections This bears out Fairbrother's[2] xperience, for in 14 recovered cases he was unable to olate the organism in a single case Before the introuction of the sulphonamides a much higher persistence convalescents was usual An average finding was that f Netter and Debre in 1911—15–25% after the fourth eek—and Embleton and Steven in 1919 even reported hat every one of 86 cases investigated became a prolonged arrier It can hardly be doubted, therefore, that the elative freedom from meningococci of convalescents ho have been treated with sulphonamide drugs is a irect effect of the drug This conclusion is strengthened hen we consider the effect of sulphonamides on carriers f the meningococcus Meehan and Merrilees[3] cleared ll but 6 out of 75 carriers by a single course of sulphayridine, and thereby appeared to bring to an end an pidemic which had prevailed over three seasons in a losed community Later, Fairbrother showed that a ourse of 4 g of sulphapyridine daily for 2 days, followed y 3 g daily for 2 days, could generally be relied on to lear the nasopharynx of either group I or group II meningococci van Rooyen and Morris now report the clearance of 35 out of 36 carriers by a course of sulphanilamide Mass chemotherapy, however, is not yet for general application In a closed community under certain circumstances it would be justifiable and likely to be effective It is noteworthy, as Fairbrother found, that other organisms in the pharynx, such as hæmolytic streptococci, are much less vulnerable to the action of sulphapyridine Although van Rooyen and Morris suggest the contrary, they give no actual data in support of their impression

In meningococcal meningitis about a quarter of the cases show clinical evidence of an acute pharyngitis Is this pharyngitis caused by the meningococcus or by other organisms? This question is still in doubt Dopter maintained that there was always a catarrhal stage in meningococcal infection, but in many cases it could not be demonstrated clinically and opinion swung away from this conception Now there is a tendency again to visualise a causal relationship between the meningococcus and pharyngitis under certain conditions van Rooyen and Morris describe 6 cases of "meningococcal tonsillitis with pharyngitis" from 4 of which a profuse growth of group I meningococcus was obtained and from the remainder a mixed growth of meningococcus and *Streptococcus viridans*, other pathogenic organisms which are usually associated with catarrh in the pharynx were absent It would be desirable to have blood-cultures and immunity reactions, such as the complement-fixation test, worked out in connexion with such investigations, and this gap in our knowledge might thereby be filled

VILLAGE REPAIR SHOP

FOLLOW-UP studies have proved of great value in the struggle against self-deception and prejudice in psychiatric treatment Coon and Raymond[1] give an account of the patients diagnosed as anxiety neurosis and neurasthenia which were treated between 1910 and 1934 in Dr Riggs's treatment centre in Stockbridge, Massachusetts It was established in 1908 "with a studied avoidance of any atmosphere suggestive of institutional life," in a small New England village Patients and doctors live in the village houses, nurses are without uniforms There are facilities for occupational and recreational therapy and each patient has a daily time schedule which leaves him little leisure, but Riggs's principal therapeutic method is re education The patient should gain "as much useful insight as possible into the origin and nature of his disability" He has to study five pamphlets on psychology which are handed to him on his arrival With medical help, he has to find a "satisfactory, logical formula" for his own complaints within the framework of this popular psychology, and to build up the plan for his readjustment The pamphlets provide an instructive clue to the outlook of the middle class American for whom they are devised They are skilfully worded, simple and clear like the practical treatises of the Jesuits, of course without any religious and with little philosophical background Everything is centred around a few slogans such as "hypersensitivity," "the cause of neurotic maladaptation," "accepting reality," "the way to rehabilitation," "Stockbridge stands by," and the centre's readiness to help in any later difficulty Riggs has always been interested in the follow-up of his patients and he instigated the present study which is the three years' work of an independent research group

The clinical material is a sample of 1060 patients with symptoms of anxiety chosen from a total of 5300 treated at Stockbridge A division into sub-groups which seems rather artificial is attempted with the help of "dynamic" concepts of Meyerian psychiatry, the impression of artificiality may be produced by the short and colourless case-histories from which all concrete facts have been omitted, probably for reasons of discretion But it is always difficult to form an opinion on the basis of other people's case histories The best results of the Stockbridge therapy were achieved in a group of "energetic, ambitious individuals who broke down following marked fear of failure, evident overwork and increasingly ill balanced programmes of daily living" Statistical methods have been applied so prudently and cautiously in the analysis that one can call this an exemplary investigation of its kind Its only disadvantage—arising from the social standing and wide geographical scatter of the patients—is that the follow-up was done by letters only, letters to the former patients and their doctors The patients' average stay in Stockbridge was only 30 days, often followed by therapeutic correspondence and shorter visits to the centre Information on the course of the case after discharge was available in 96% of all patients, but at the time of the investigation (1936–39), the condition of 36% could not

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[1] van Rooyen C E and Morris, J C J *Roy Army med Cps*, April 1941 p 200

[2] Fairbrother R W *Brit med J* 1940 2, 859

[3] Meehan J F and Merrilees C R *Med J Aust* July 27, 1940, p 84

[1] A Review of the Psychoneuroses at Stockbridge by Gaylord P Coon M D and Alice F Raymond A B Stockbridge, Mass Austen Riggs Foundation Pp 299

Annotations

WHEY

THIS summer, Lord Woolton has told us, we shall probably have more milk than we need At any rate our need may be greater next winter and accordingly some of the milk will be made into cheese for safe keeping In the past this has been done wastefully Most of the albumen in the milk and all the sugar has been regarded as a trade effluent, and a very harmful effluent at that because the lactose and bacteria together have starved the fish of their oxygen and the cheese factory has proved more damaging to river live stock than is the sewage farm But this year such waste will not be tolerated and necessity being the mother of invention means will be found to condense or dry the whey so as to make it available for human food or to replace dried separated milk in rearing calves Whey, as Sir Gowland Hopkins points out in a letter to the *Times* of May 17, contains all the lactalbumen, nearly half the calcium, most of the other salts, nine tenths of the vitamin B_1, three quarters of the riboflavin (vitamin B_2), and a very large proportion of the lactose of the original milk Spray dried whey, with its 12 per cent of first class animal protein, makes an acceptable addition to many kinds of table dishes Hopkins estimates that at least 15,000 tons of dried whey should be available in the coming summer But this is only about half a pound per head of population and many of us will be happy to get any.

A QUININE DERIVATIVE FOR PNEUMONIA

FOR generations quinine has had its advocates in the treatment of pneumonia, and more than 25 years ago a quinine derivative, Optochin (ethylhydrocupreine), was shown to have a specific action on pneumococci It is strange now to read that W E Dixon quoted this in 1922 as the only instance of specific drug therapy in acute general bacterial disease This drug sometimes damaged the vision, and it was therefore discarded Next came Solvochin, which had an extensive vogue on the Continent and a lesser one in this country before the advent of the sulphonamides Now the quinine idea has been revived in the use of hydroxyethylapocupreine in a series of cases of pneumonia in Pittsburgh At the Mercy Hospital Prof W W G Maclachlan and his colleagues[1] introduced this compound in 1935, using a dosage of gr 15 three hourly for 3–4 days They have now compared their results over a five year period with those in a control series treated with sulphapyridine In the 494 cases treated with the quinine compound the fatality was 24%, yet in their experience this figure was little higher than the best obtained with sulphapyridine All their patients were adults, and their series contained a high proportion of patients over middle age In 1939 they treated 79 cases with hydroxyethylapocupreine either alone or with a sulphone glucose derivative which was soon discarded as ineffective The average age of this group was 46 years and the fatality 24% Of the 31 cases treated with sulphapyridine in the same period the average age was 56 and the fatality 22% Nausea and vomiting were slight from the quinine drug and no other toxic manifestations were met with, but these advantages over the sulphonamides seem more than counterbalanced by its ineffectiveness in pneumonias of non pneumococcal origin

This drug has been used by Menten and MacDonald,[2] also of Pittsburgh, in the conservative treatment of empyema in children In 25 cases 25–150 c cm of a 1% solution of hydroxyethylapocupreine dihydrochloride were injected into the empyema cavity every third day after aspiration of as much pus as possible The number of tappings required varied from 3 to 12, and 14 of the 25 children were discharged cured, the remainder having a rib resected From the child's point of view a simple rib resection would as a rule be preferable to the repeated ordeal of aspiration and injection, and since irrigation with a saturated solution of sulphapyridine after rib resection leads to rapid sterilisation and clearing of the empyema cavity Menten and MacDonald's method is not likely to find many adherents

GUY'S IN THE COUNTRY

LIKE many other teaching hospitals Guy's has suffered as the result of enemy action , but, although the activities of the hospital have been considerably curtailed, neither the inpatient nor the outpatient department has yet been compelled to close its doors for a single day Nevertheless the suggestion of the Ministry of Health that the teaching hospitals should establish annexes outside London was gladly accepted by the governors of Guy's, partly out of a desire to provide additional beds in a safer area for the civilian sick and for air-raid casualties from the Borough, and partly to ensure, as far as is humanly possible, that the continuity of the hospital, unbroken for more than two hundred years, should be maintained Unfortunately the geographical position of the sector in which Guy's is the apical hospital renders it exceedingly vulnerable, and relatively safe areas are not easy to find Thus it is not surprising that the hospital was unable to secure as large a building as the governors would have liked , and indeed it was highly fortunate to be offered the greater part of a country club which is now in process of being adapted to provide a hospital of 110 beds The club is a fine old country mansion, substantially built with a series of large, lofty, beautifully decorated public rooms on the ground floor, now being converted into wards The windows look out over park and well-wooded downland—a very different view from that which meets the eye from the east windows of Hunt's House, even since the Nazi clearance of the site has widened the horizon There is no lift big enough to take a bed or a stretcher, but the staircase is wide and easy On the first floor a series of large bedrooms and private suites will provide a number of small wards, containing 2–5 beds each, rooms for the resident medical staff, an operating-theatre suite and an X-ray room If the demand arises, arrangements can easily be made to provide accommodation for a limited number of paying patients The second floor affords sleeping quarters for about 40 sisters and nurses, while an exceptionally roomy basement will house the clinical laboratory, kitchen premises, nurses' dining room and the air raid shelter

Since the decision was taken to establish an annexe at this club, the American organisation, "Bundles for Britain," has become keenly interested , its Hollywood branch has adopted Guy's and is to present the additional equipment that will be needed After an initial gift of $10,000, the complete equipment of the operating theatre has been provided and a deep X ray plant is on the way, while other expensive instruments and articles of hospital furniture—such as fracture beds—have been promised In appreciation of these gifts the governors have named the annexe "Guy's U S A Hospital" The deep X ray plant will replace the plant destroyed by fire in December, 1940 On that occasion the Guy's fire watchers and fire fighters succeeded in preventing any damage to the hospital buildings except a part of the roof of Hunt's House, in the top floor of which the deep X-ray therapy department was situated The new plant will be housed in a hut specially erected for it, communicating with the ground floor of the main building by a short covered way It may be possible to associate radium therapy with the deep X-ray work, so that treatment of patients suffering from the appropriate

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[1] Maclachlan, W W G , Johnston J M , Bracken M M and Pierce, L S *Amer J med Sci* March, 1941, p 367

[2] Menten, M L and MacDonald, R R *Penn med J* 1940 43, 1305

Special Articles

FLUOROSIS IN ENGLAND

THE GEOLOGICAL ASPECT AS A GUIDE TO PREVENTION *

By C N Bromehead, B A Oxfd, F G S

Fluorine poisoning in its various forms, whether in man or other animals has received considerable attention in many countries, notably in Denmark (Roholm 1937) and the United States (Getter 1939, and many others) In America, as early as 1936, Fink and Lindsay wrote "With the rapidly increasing numbers of communities reporting fluorine-bearing waters, the occurrence of fluorine toxicosis has taken an added significance and is now generally recognised as a serious public-health problem"; in 1939 Nichols speaks of it as "a serious problem in water supply throughout the world in general" In England this public-health problem is only now beginning to receive attention Dental fluorosis was noticed by Ainsworth in Essex in 1933 and a few other cases have been mentioned, but a paper on fluorine in connexion with goitre (Wilson 1941a) and a discussion at the Royal Society of Medicine on fluorosis in man and animals in February last seem to be the first indications of any general interest in the subject

In April, 1939, Dr Dagmar Wilson wrote to the Director of the Geological Survey stating that her work on fluorosis in India had shown an interesting correlation with the geology of the regions investigated and that she intended to study the incidence of dental (and, if found, more serious) fluorosis in England, she asked for assistance on the geological aspect It has been repeatedly shown that fluorine toxicosis, when not caused by fumes from factories known to be using that element, can be traced to drinking water, a fluorine content as low as one part per million producing effects The study of water-supply from underground sources has always been an important part of the work of the Geological Survey, and, as an emergency measure, this work has recently been greatly intensified When a disease traceable to water containing fluorine was to be investigated, it seemed only reasonable for the survey to indicate the possible sources of the fluorine I was deputed to help Dr Wilson in this way

Fluorine, in the minute quantity regarded as dangerous, has in the past seldom been sought in routine analyses either of drinking water or of the sedimentary rocks from which most underground supplies are derived Nor is it practical to suggest that any large number of such special analyses should be made Large public water-supply undertakings could arrange to have samples examined in laboratories where the necessary skill and equipment are available, but most of the trouble arises from small-yielding wells serving single dwellings Accordingly, it was decided that the investigation should follow two lines first, that Dr Wilson should visit any areas which as a geologist I considered likely, on a priori grounds, to give positive results, secondly, that she should examine children attending all schools in Oxfordshire and adjoining areas for signs of fluorosis (the choice of this region being a matter of personal convenience) It seemed probable that the distributional results of the second inquiry, collated with the local geology, would result in particular geological formations coming under suspicion, their outcrops in other parts of the country would then be added to the list of areas likely to give positive results

Districts where fluorine is abundant in rocks have long been known, since the mineral fluorspar (calcium fluoride) is commercially valuable and consequently mined (Geological Survey Memoir 1922) It was thought desirable that some, at any rate, of these districts should be examined for fluorosis, although serious positive results were not considered likely Fluorspar is a highly insoluble substance, only 0 004 g dissolving in 100 c cm of water In Derbyshire, perhaps the best known source of fluorspar, Sutton (1936) has reported on 43 drinking waters, of which only 1 had a fluorine content exceeding 1 p p m (1 4) and 5 others exceeding half that amount Dr Wilson visited parts of Derbyshire, Durham and Westmorland where fluorspar is worked Such signs of fluorosis as were detected were mostly in children using water derived from disused lead mines, fluorspar accompanies the lead-ore, and the practice of using water from such sources is obviously dangerous A certain amount of fluorspar is found in Cornwall, in the china-clay district near St Austell the fluorine vapours have given rise, in addition to the fluorspar which is a constituent of china-stone, to comparatively abundant fluorapatite, this mineral is a fluo-phosphate of lime and is much more soluble than fluorspar, its chemical formula is $Ca_{10}(PO_4)_6F_2$ corresponding to $Ca_{10}(PO_4)_6(OH)_2$, that of hydroxy-apatite, which Thewlis (1940) has shown to be the inorganic constituent of teeth At my suggestion Dr Wilson paid a brief visit to this area and found numerous cases of fluorosis up to F_5 of Dean's grading (1938), which runs as follows —

F_1 = Normal
F_2 = Doubtful
F_3 = Very light
F_4 = Light
F_5 = Moderate (mottled)
F_6 = Moderate (stained brown)
F_7 = Somewhat serious
F_8 = Serious

Wilson has recently shown (Wilson 1941b) that a small intake of fluorine tends to produce immunity to dental caries The greatest immunity was found by King (1940) in the island of Lewis, apatite is among the chief accessory minerals of the gneisses of which that island is composed In this connexion it may also be noted that Westmorland, mentioned above as a fluorspar district, has the highest immunity to caries in England

Apatite is fairly common amongst the heavier detrital minerals of sands and sandstones, which are frequent sources of underground water-supplies Analyses of sands have usually been made on samples from surface exposures, and it may be that apatite is more abundant in beds under cover reached by boreholes Any unusual concentration of this mineral might be a dangerous source of fluorine More research in this aspect of the subject is desirable, particularly where sodium compounds, such as common salt, are present in the water, the formation of sodium fluoride must be considered, because that compound is a thousand times more soluble than calcium fluoride Boswell (1915) has noted that apatite is abundant in a few samples of Thanet Sand in East Anglia, and Thresh (1916) has mapped the distribution of salt in the deep wells of Essex which derive their water from Thanet Sand and Chalk, many deep borings in Suffolk also give saline waters The conjunction of these two factors may explain the fluorosis of the Maldon and other areas of Essex This suggestion is supported by Schuck's (1938) experiments on rats She concluded that there may be a relationship between the activity of fluorine in drinking water and the amount of sodium present, in that a high sodium content may mean that the greater part of the fluorine is present in the form of sodium fluoride, and this has been shown to be more toxic than the other forms investigated

The affinity of the element fluorine for phosphate of lime is important in this connexion, but has not received much attention It is known from the work of Carnot (1893) that fossil bones tend to acquire additional fluorine with age until a composition approaching that of fluorapatite is reached Thus, if the proportion of fluorine to phosphate of lime in apatite is taken as unity, the relative proportion in modern bones is 0 058, pleistocene fossil bones 0 33, tertiary fossils 0 62, mesozoic fossils 0 91 and palæozoic fossils 0 99 This gradual concentration of fluorine as a comparatively soluble fluo-phosphate of lime is presumably related to the action of the element on teeth and bones which occurs in fluorosis, and it suggests that the dangerous quality of the Oxford Clay and other clay formations mentioned below is related to their content of saurian and fish remains, and that phosphatic deposits such as bone and coprolite beds would be specially dangerous Phosphates having acquired fluorine from circulating water in geological time may yield it back to such water under conditions of depth and pressure which have not yet been studied, but analogous actions (for example the deposition of calcium carbonate as a cement in sandstones which now yield hard water) are familiar

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be found out At this time 30% were much improved, 28% improved and 6% unimproved Comparison with similar reports from other institutions have been attempted, but they were rendered difficult because most of the others fail to state the number of unknowns This work will be of special value one day when our present experiences of war-time neurotics can be followed up and compared with the peace time clientele of Stockbridge

MEASURING APTITUDE

In the last war, Dr C S Myers records,[1] *he found one* of our most distinguished mathematicians counting rail way tickets in the marshalling yard of a harbour station, and it was some time before his abilities were given proper scope in solving gunnery range finding problems In this war many of us could tell of other lights under bushels, though perhaps not such brilliant examples as the one quoted It is encouraging to learn, however, that the authorities are beginning to use more freely the information which experts in vocational selection can now put at their service Vocational and intelligence *testing, which have sometimes been held in suspicion as* a species of trickery unfair to the subject, have become increasingly reliable in recent years They are not, of course, the only methods by which capacity is assessed, indeed, they are merely accessory to other and more general methods of approach, but they can be used successfully to measure aptitude in recruits to such technical units as the tank brigade and the gunners Dr Myers mentions the commander of an artillery regiment who has invited psychologists to examine his recruits and has used the results to select range takers *and other skilled gunnery assistants Batches of recruits* to the R A M C have also been examined with a view to choosing suitable men for special duties, and discovering those who are backward and would profit by special instruction

Other problems in efficiency are still the subject of research Dr Myers mentions two university laboratories at which experiments are being made on individual differences in speed and degrees of dark adaptation of the eye, as it affects airmen, and on the errors to which pilots become liable after prolonged periods of flying blind In yet another sphere, psychologists have been able to plan instruction courses for those in industry so *that maximum capacity may be quickly developed, and mistakes recognised and avoided* Advice has also been given by industrial psychologists on arrangement of shifts in factories, rest pauses and hours of work It is unfortunate and extraordinary that in many factories the relation of hours of work to output is still not recognised, and that men are still working ten and eleven hours a day for seven days a week to the detriment of their output, their health and the nation's interests

LIVER IN PERNICIOUS ANÆMIA

At the present rate the word offal will soon become synonymous with tit bit, for the parts which come under this heading are taking an increasingly important place in human dietary Sweetbreads are the source of insulin, liver contains the curative factor for Addisonian pernicious anæmia, and today, in the midst of war, offals have become a rationed food, difficult to obtain, valued not only for their specific properties but also as a source of first class protein Any means of reducing their excessive consumption by one group in the community will increase the supplies for the country as a whole A memorandum by the food rationing (special diets) advisory committee of the Medical Research Council, referred to in our columns last week, makes it clear that patients with pernicious anæmia are still being treated with fresh liver by mouth in spite of the known fact that liver given *in the form of* a highly concentrated extract by intramuscular injection is both cheaper and more effective The committee have advised that fresh liver is not necessary for treatment except possibly in the rare cases in which extracts give rise to anaphylactic shock On another page, however, Dr C T Andrews *shows that it is possible to desensitise* a patient to liver extract, so that even this exception no longer holds good The committee point out that no patient with pernicious anæmia can be regarded as under proper therapeutic control unless the red cell count is 5,000,000 per c mm and the hæmoglobin 100% To maintain this blood picture it is necessary to eat phenomenal quantities of raw liver, which very few people can continue to do for long On the other hand, 1–2 c cm of liver extract once every two or three weeks will in the majority of patients produce the desired result So convinced are *the members of the advisory committee of the fact that* no patient with true Addisonian pernicious anæmia is resistant to treatment with parenteral extracts that they have agreed to investigate any case of anæmia which a medical practitioner finds is responsive to fresh liver but not to parenteral extract[1] The committee recognise, of course, that certain patients may be diagnosed as having pernicious anæmia when in reality they are suffering from some other condition, especially malignant deposits in the bone marrow or some disturbance of intestinal function For the former nothing can be done, for the latter *other associated dietary deficiencies must be remedied and an attempt made to relieve the underlying* intestinal abnormality The memorandum points out that liver extracts for oral administration are less effective than parenteral ones and also that more raw liver is required in their preparation Under present conditions they therefore deprecate the use of oral preparations The same objection does not apply to stomach extracts Patients with chronic ailments are notoriously con servative, and sufferers from pernicious anæmia who have become stabilised on raw liver or on oral liver extract will not all welcome a change But those who shy at the hypodermic needle will at least know they are helping to conserve the nation's food supply with benefit *to both their health and purse*

CARBON MONOXIDE

"The gas mask does not prevent the absorption of carbon monoxide and the poisonous effects that might result, but gives full protection against all the gases used in warfare and discussed in the memorandum"

Correspondents have inquired with good reason whether the Ministry of Health in their memo to doctors on the *diagnosis and treatment of gas casualties* (reproduced in The Lancet of May 10, p 613) intended to imply that the gas-mask protects against the inhalation of carbon *monoxide, say from broken gas mains The first* sen tence in the concluding paragraph certainly bears that construction and "all these gases" should have been qualified by the words "used in warfare" As it is, we understand, too late to correct the official memo it would be advisable for all those into whose hands it comes to add to it the sentence at the head of this note

Sir D'Arcy Power, consulting surgeon and governor of St Bartholomew's *Hospital*, died at Northwood last Sunday at the age of 85

At the annual meeting of the section of psychiatry of the Royal Society of Medicine on Tuesday, May 27, at 4 30 P M, Dr A B Stokes and Dr S W Hardwick will open a discussion on metabolic changes in periodic catatonia At the section of medicine, which meets at the same time, Dr Philip Ellman will read a paper on mass radiography of the chest, Dr M F Maclagan on *galactose tolerance* in jaundice and Graves's disease, and Dr C G Barnes on the electrocardiogram after pneumonectomy an abscess in the thigh In this ward he died Post-mortem examination showed death to be due to streptococcal septicæmia contributed to by an abscess in the pelvis resulting from secondary infection of a bruised area in the pelvis The coroner was naturally concerned to examine the possibility that the deceased became infected in a ward which contained patients suffering from hæmolytic and non-hæmolytic infection There was evidence that after treating infectious cases the nurse changed her outer clothing and was disinfected The house-surgeon said he did not think that the deceased contracted air-borne infection from the other two patients Infection from the case of erysipelas was unlikely, infection from the case of abscess in the thigh was possible but that case had remained only six hours in the ward The coroner recording a verdict of death by misadventure, said he could not exclude the possibility of infection from one of the other two patients, though it was fair to say that infection might also have come from elsewhere It was perhaps more likely that the infection came from the ward because there was definite evidence of infectious cases there and no evidence of an infectious source elsewhere In his opinion there had been no negligence or want of care on the part of anyone concerned

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[1] *Nature*, May 10, p 264

[1] Applications for such a test should be made to Prof J C Drummond Ministry of Food Neville House, Page Street, London, S W 1, together with a full medical history

Mental Hospital Kitchen not a Factory

In Wood v London County Council a kitchenmaid employed at the Bexley Mental Hospital whose right hand had been injured by an electrically operated meat machine claimed damages from the L C C for the negligence of their officials and alternatively for the failure to fence the machine as required by section 14 of the Factories Act Mr Justice Tucker found that the kitchen was a " factory ' within the lengthy definition in section 151 (1) of the 1937 act the mincing machine was dangerous and was not fenced as the act required, but as he also found that the plaintiff had been guilty of contributory negligence, he decided in favour of the L C C On her appeal the Court of Appeal said the kitchen was not within the act, if it were extraordinary results would follow work could not begin before 7 A M or continue after 6 P M—an impossible situation for the conduct of a mental hospital A kitchen, he said was not within the Factories Act even when carried on in a large way by people running a restaurant for trade or gain But, even supposing the kitchen to be a factory, the Court of Appeal concurred in the finding of contributory negligence which was fatal to the plaintiff's claim Hospital managements (which may be surprised by the suggestion that they carry on a factory) have often been advised to cover themselves by insurance against the risks of accidents and claims of this nature The plaintiff's form of action obliged her to prove negligence or breach of duty it was not like a workmen's compensation case where it is quite unnecessary to show that the employer was at fault

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THE A M A CONVICTED

AFTER a trial lasting eight weeks the criminal proceedings at Washington against the American Medical Association the editor of its *Journal* and several other defendants has ended surprisingly On the charge of conspiracy to violate the Sherman Act (the so-called " anti-trust ' law aimed against monopolies) the association and also the district medical society at Washington have been found guilty while the eighteen individual defendants have been acquitted Juries have the historical mission of mitigating the rigid logic of the law There is patent inconsistency in a verdict which condemns two impersonal organisations while exempting from criminal responsibility the members and officers of those bodies, it is only by the agency of individuals that the suggested conspiracy could have been designed and conducted

We summarised last month (*Lancet*, April 5, p 457) the indictments and the opening speeches The defendant organisations and practitioners were tried under a statute of Congress which forbids and punishes every combination or conspiracy " in restraint of trade " in the District of Columbia Medical practice is ' trade ' for this purpose so also is the work of hospitals or of other bodies which provide medical care A society called Group Health Incorporated sought to furnish medical treatment on a flat-rate prepayment basis by salaried practitioners The defendants were accused of conspiring to restrain Group Health from arranging medical and hospital care for its members and their dependants, to restrain the Group Health doctors and others in the District of Columbia from pursuing their avocation and to restrain the Washington hospitals from doing their work The defendants it was said tried to coerce doctors who might join or be consulted by the Group Health staff by threats of disciplinary proceedings and by obstructing the grant of hospital facilities The defence replied that there was no criminal conspiracy but merely legitimate persuasion and that any disciplinary proceedings were merely reasonable action taken in good faith under the Association s constitution and rules to protect the organisation and its standards of medical practice The judge duly explained to the jury that the corporate defendants would be criminally responsible if authorised officers acting for or in the name of the corporation did acts within the apparent scope of the corporate powers in forming or furthering the alleged conspiracy The reports of his summing up do not appear to justify any simultaneous finding of corporate guilt and individual immunity It is reasonable to suppose that the jury reached its verdict (as so often) by way of compromise The convicted bodies seem to have adequate material for an appeal If the conviction stands, the result is that some highly distinguished medical practitioners have happily escaped being branded as criminals, while Group Health is given a chance to show what voluntary coöperative health insurance can do for classes of moderately paid citizens without interference from professional trade-unionism

The evidence tendered to the jury occupies some 300 pages in nine successive issues of the J A M A [1] It is likely that one of the most impressive witnesses was Dr Hugh Cabot C M G who will be known to many in Britain through his service with our medical units during the last war He described his work at the Mayo Clinic at Rochester Minnesota where group practice has been carried on by salaried practitioners of good reputation He said he was now working as medical director with a partnership of physicians for a body known as Health Services Incorporated, at Boston there was remuneration by contract between the medical group and the business side of the undertaking patients had the modern advantages of specialised treatment Dr Cabot traced the prepayment system back to the British friendly societies He said it was not unethical for a doctor to take a salary from a group there was no ground for refusing hospital facilities to a salaried doctor He instanced also the Ross-Loos Clinic with its salaried staff and the Stanacola (Standard Oil Co) group formed in Louisiana at the instance of employees He suggested a classification of " producer " organisations set up primarily by physicians who offered medical care on a prepayment basis and " consumer " organisations where the initiative came from the patients Somewhere between these two he placed the industrial establishment which arranged for the care of workers in a particular undertaking and possibly also for that of their families He cited the Southern Pacific Railroad s hospital arrangements at San Francisco Group practice he said, promoted preventive medicine On the ordinary fee-for-service " basis a doctor could not stop Jones in the street and say "You ought to have your children vaccinated " under group-practice conditions he could do so The witness saw no great danger to the principle of free choice of physician Called by the prosecution his evidence may well have had great influence upon the minds of the jury

American comment on the trial indicates preoccupation with the trade-union aspect Last February the Supreme Court of the United States held that for the purpose of the Sherman Act and " restraint of trade ' the labour unions are not really in trade or commerce at all The occasion was a dispute involving a carpenters union, irritated by the irresponsible tactics of the big American unions critics have been swift to note that medical associations are deemed to be in trade while carpenters are not, and that a medical society can be schooled by the law courts while labour unions are in a sense outside the law

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[1] *J Amer med Ass* Feb 15 to April 12 1941 incl

In view of these facts I suggested to Dr Wilson that she should investigate the incidence of fluorosis at localities situated on the Lower Greensand coprolite bed Dr K P Oakley (1940), who during the present war has been working for the Geological Survey on British resources of phosphates for fertilisers, drew attention to patches of this formation in Buckinghamshire, the chief localities being Great Brickhill, Bishopstone, Stone and Bow Brickhill At Great Brickhill the phosphatic nodules in the bed are known to contain as much as 2 8% fluorine Dr Wilson's results confirmed the suggestion that this formation would give rise to dental fluorosis, amongst school-children from these and other localities in the district she found 17 cases (see table) The affected children at Flitwick, Ampthill and Maulden were living on the Lower Greensand, near its base, where the coprolite bed occurs In every case in the series the child is known to have used water from a shallow well at Great Brickhill and Bow Brickhill children who had always used water laid on from a public supply showed no sign of the disease

NUMBER OF CASES OF FLUOROSIS FOUND AMONG SCHOOL CHILDREN IN PARTS OF BUCKINGHAMSHIRE AND BEDFORDSHIRE (GRADED ACCORDING TO THE DEAN SCALE)

—	F_6	F_5	F_4	F_3	F	Total
Great Brickhill		1	1	1	2	5
Bishopstone	1		2	1		4
Stone			2	1		3
Bow Brickhill					2	2
Flitwick	1					1
Ampthill				1		1
Maulden				1		1

THE OXFORD CLAY

In Oxfordshire, where Dr Wilson carried out her more intensive investigation, it was already known that one formation—the Oxford Clay—contained in one district as much as 480 p p m of fluorine, and that its presence in another district was associated with much fluorosis among cattle Dr Wilson's cases of human fluorosis confirm that the Oxford Clay is often a source of danger She also detected the disease in children of four localities in Bedfordshire lying on Oxford clay Here again in every case the children affected came from cottages using their own shallow wells, whereas the results were negative in school-children at villages situated on the Oxford Clay but using water from a public supply which had had no contact with the clay At Marston Moretaine we have a record of a well in the school yard of which the section is River Gravel 20 ft , Oxford Clay 65 ft , Great Oolite 10½ ft., 55 ft was a dug shaft—the rest bored Though this well has long been disused, it is safe to assume that other wells at cottages were similar Again in the area of Witney, of which about half is Oxford Clay, 14 out of 17 fluorosis localities are on that formation, shallow wells, sunk through superficial deposits to the clay, have been used A number of houses at Headington Quarry are, or have been, dependent on their own wells, at one house fluorosis was serious, but there have been no further cases since 1935, when a public supply from the Oxford water company was installed On the other hand, no cases of fluorosis have been detected in connexion with 5 wells in this district, details of the construction and depth of the various wells are not available, but it seems probable, in view of the evidence given, that those with fluorosis histories reach the Oxford Clay and those without it are wholly in Corallian beds

OTHER JURASSIC CLAYS

In the Oxfordshire area, 7 localities, in addition to Headington Quarry, have shown animal fluorosis in varying degrees, all are on Kimmeridge Clay The Lias also falls under suspicion, Dr Wilson found fluorosis in 13 localities in Oxfordshire, in the area of Chipping Norton of which 11 are on Middle and Lower Lias and one on Upper Lias I have already shown (Bromehead 1941) that Dr Wilson's results in Somerset indicate that the lower part of the Lias or the highly phosphatic Rhætic bone bed a few feet underneath it, or both, are under suspicion of causing fluorosis in that county.

DISCUSSION

The exact distribution on geological formations of all cases of fluorosis found by Dr Wilson is being noted and will become of increasing value as her research proceeds The following conclusions may be given now Well water which is either derived from or is in contact with any phosphatic beds or with some clays of marine origin (of which the Oxford Clay, the Lower Lias and the Kimmeridge Clay are the most important) is likely to cause human fluorosis Wells in such formations are usually of small yield and serve individual cottages or small villages Their use should be avoided, public supplies derived from other sources and under constant supervision as to quality are usually available Borings passing through fluorine-bearing beds but lined with steel tubing to exclude contact are of course safe With the possible exception of the Malden area (Ainsworth 1933) there is as yet nothing to suggest that processes for removing fluorine from the only available water will be necessary in this country, but such a process has been tested in the United States (McKee 1934, Elvove 1937)

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MEDICINE AND THE LAW

The Wrong Cylinder

A FATAL accident at a maternity hospital was investigated lately in the Airdrie sheriff court under the procedure which is to some extent the Scottish equivalent of the coroner's inquest Two women suffering from toxæmia were admitted to the hospital and gave birth to children prematurely in the early part of March Both babies required oxygen at frequent intervals A member of the medical staff, entering the ward one afternoon, saw that the wrong cylinder was being used Instead of the white-topped oxygen cylinder, the nurse was using an all-black cylinder of nitrous oxide She had worked at the hospital for 30 years but somehow had failed to notice the mistake The medical superintendent gave evidence that the fullest inquiries had been made and a new system of checking cylinders had been introduced He confirmed the view of a previous medical witness that the condition of the babies was such that in any case it was unlikely that they would have lived—a point which, though possibly of some comfort to those concerned, is naturally in other respects immaterial Incidentally the medical superintendent referred to the popular belief that a seven months' child would live, its life, he said, was always doubtful The jury returned a formal verdict Deplorable as are the results of such mistakes, it is not difficult to appreciate that hospital work in war-time is often conducted under great strain

A Question of Infection

An inquest last month showed that a man, hitherto entirely healthy, had fallen from a scaffolding and had broken his pelvis Taken to hospital in a north-western town, he was afterwards found to be suffering from some throat infection He was then removed to an isolation hospital and placed in a ward where another patient was suffering from erysipelas and a third was suffering from

In England Now

A Running Commentary by Peripatetic Correspondents

THE announcement by the Minister of Health of the scales of payment for members of the nursing reserve has caused some heartburning north of the Border. Nurses writing to the *Glasgow Herald* during the past few weeks have taken the opportunity to draw attention to the unsatisfactory conditions of employment which still exist in the profession. One correspondent says that "the hours are long and arduous, the food and conditions leave much to be desired, and the treatment meted out by one's superiors is often harsh and childish." This makes melancholy reading for those of us who recall the findings of *The Lancet* Commission on Nursing nearly ten years ago. Hospital authorities who, during the past decade, have shown indifference to the problem of recruitment of nurses are now reaping a veritable whirlwind. One of the *Glasgow Herald's* correspondents points out that a probationer now receives £20 per year; on the other hand, any young woman answering Mr Ernest Brown's trumpet call will have twice this amount. Thus, at a time when nearly all classes of workers are harping on the importance of their own contribution to the national effort, nursing is to suffer "dilution" by unskilled workers who will receive higher pay than the regular members of the profession. This Gilbertian state of affairs will not surprise the public because the public doesn't care a rap about nurses' working conditions until it is laid low with illness. Unfortunately the nursing profession has shown itself unable or unwilling to look after its own interests in the way that the medical profession has done by the formation of the B.M.A. Few physicians and surgeons would deny their indebtedness to nurses for indispensable help in professional work and in clinical research. It would be an appropriate gesture in acknowledgment of this valuable collaboration if the B.M.A. were to invite nurses' associations to become affiliated for the purpose of safeguarding the dignity and security of their profession. It may be argued that it is the duty of hospital managers and local authorities to look after the welfare of their nurses, and let it be said that a few hospitals are fully alive to their responsibilities. In general, however, doctors must be appalled by the indifference of the hospital administration to the comfort and convenience of their nursing staffs. I had a further reminder of this lately when I noticed that in one of the largest general hospitals in the country there is only one telephone for the use of the 400 nurses. This instrument is also used by some 200 wardmaids and other domestic workers. I often see nurses who have come off night-duty standing in a queue in a draughty corridor awaiting their turn to use the telephone. The absence of a queue usually means that the telephone is out of order. Perhaps these minor inconveniences will be remedied when Mr Brown's highly paid recruits arrive at the hospital.

* * *

We hear a great deal nowadays about racial purity, but what about racial impurity? Our Empire contains members of almost every major and minor race group in the world, yet information about its racial composition is sparse and disappointing, and Mr K. L. Little's suggestion (*Eugen. Rev.* January, 1941, p. 114) of a comprehensive investigation of the results of mixing (miscegenation, as the eugenists call it) of the various stocks of different parts of the Empire is worth thinking about. But much preliminary work will have to be done before the scheme is likely to appeal to the man-in-the-street or the man-in-the-cabinet, for neither the professional anthropologist nor the eugenist has won the confidence of the British electorate, partly because the object of their work has not been stated in a form appreciable to all and partly because there is so little harmony among themselves as to what methods of research are likely to produce reliable information. What we really want to know about the mixture of races and its results should be plotted out, submitted to the British Association for criticism and discussed in the press, so that the importance of the subject may be widely understood. Then the details of the methods of examination to be adopted by all observers should be settled. That this, together with finance, will be the most difficult task of all was brought home to me in a committee of the Anthropological Institute formed at the beginning of the present war under the chairmanship of Prof. Ruggles Gates, to decide what measurements should be made on the mass of soldiers now quartered all over Great Britain. We had the greatest difficulty in agreeing on some six or eight measurements; I hope that our time was not thrown away for I have heard nothing of the scheme since.

Probably the most useful records of the results of mixing British with other stocks will lie in psychological and mental rather than anatomical tests, though undoubtedly the head shape is worth recording since it tells something about the brain within. Then too, the capacity for breeding under adverse conditions is important, as instanced by the fact that the round-headed Alpine race has outbred the Nordic all over the centre of Europe, and Britain has only been saved (or denied) from being outbred by it by the Channel. A preliminary examination of the hybrid stocks already evolved from a mixture of European with other races would be valuable. Let the American anthropologists, statesmen and administrators of justice tell us their views of the mental and physical characters of the new half-caste population established in their country; its fertility, reliability, mental capacity and adaptability first, and then its physical characters. Let us know what the West Indian specialists think of the half-castes, quadroons and octoroons of their islands, and let us have the unbiased observations of East Indian experts on the Eurasian or *chichi* population of India, and so on. Only let us realise that the mental characteristics of its mixed races are far more important from an Imperial point of view than the physical, though these should not be neglected.

Many medical men and women who come into contact with mixed races, although they may not claim the distinction, are very real anthropologists since they have to study mankind both mentally and physically. Scotland Yard, magistrates, missionaries, lawyers and editors, all of whom are anthropologists in the broad sense and many of them in touch with half-castes, could and would give their experience. But it is for the professional anthropologist to suggest the points on which knowledge is needed and to arrange for the supply of such simple apparatus as is necessary for the appropriate tests. As Prof. J. B. S. Haldane has said, the study of racial crossing will take generations to complete and any attempt to start it now would probably fail, because people have so many more urgent things to think about; but Mr Little's suggestion is a good one and will doubtless mature when times are quieter.

* * *

The time of the singing of birds is come. A clear blue sky and brilliant sunshine streaming down the Clyde valley made an irresistible appeal; the family decided that the time was ripe for resuming our Sunday walks which had been discontinued during the long and dreary winter. Following our usual practice, we left the road about a mile beyond the village and struck across country. The magnificent panorama of the highlands began to open out before us, and on the higher ground we saw the familiar outline of Ben Lomond dominating the countryside for a score of miles around and still capped with a layer of dazzling snow. The children, walking through the long grass or foraging among the bushes on the look-out for nests, were the first to remark that everything was dusty. In the open country, 15 miles from Glasgow, this was indeed remarkable. I carefully snipped a dozen leaves from a bush and allowed them to fall into an envelope in true Thorndyke style. When we got home I took the leaves and gently brushed the dust on to a microscope slide. It was composed mainly of amorphous gritty particles, mica and soot, but here and there were minute fragments of building brick. This then was the destination of a part of the dust cloud raised a few days before in the Clydeside blitz. And it should not have surprised me when I can just remember the dusty sunsets here after Krakatoa blitzed itself 10,000 miles away.

* * *

"Platoon!" screamed the sergeant "platoon ... for inspection ... port ARMS!" The commanding officer of the village platoon of Home Guard, wearing his balmoral, walked briskly to the head of the three ranks

PROTEIN NEEDS

In the course of an address given on May 14 to the food group of the Society of Chemical Industry Prof E P CATHCART, F R S, dealt with the vexed question of first-class protein In actual practice, he said, the protein problem, provided the actual quantity does not fall below the physiological minimum (say about 50 grammes for an ordinary man), is only a matter of real concern where children, expectant and lactating mothers are concerned, and probably of the three the lactating mother runs the greatest risk as she makes the greatest demands on such protein as is available for the production of the protein of her milk

THE GROWING CHILD

I do not mean to infer, said Professor Cathcart, that the provision of an adequate supply of good protein is not of importance to the growing child It is But, on the other hand, far too much stress is laid on this growth demand as the result of absorption in the results of animal experiments It seems to be overlooked or forgotten that the growth of the child is, as compared with that, say, of a young animal like the rat, very slow, and hence the daily demand is small The same may be said of the expectant mother The intra-uterine growth of the 3 5 kg newborn infant, containing approximately 550 g of protein, is spread over a period of some 280 days—i e, there is roughly a need of 2 g per day (although in actual fact the need is not evenly distributed throughout the period of gestation) In the case of lactation, however, the quantity of protein secreted in the milk is quite substantial and must be made good from an adequate supply of protein in the diet Prof E F Terroine (Strasbourg) is very certain that "there is no *need* to include proteins of animal origin in the diet of man, whatever the stage of life considered and whatever the nature of the need to be satisfied," although he does admit, "it may be *useful* to include such protein if the staple food, which covers the energy expenditure, is very poor in protein and if the latter are of inferior quality In such a case, the addition of milk or meat will enable the protein value to be raised to the requisite level, but the part substitution of one legume would have the same effect" We in this country have made provision for this contingency by the allowance of milk for children and expectant and nursing mothers

THE MANUAL WORKER

It is easy to talk in an academic way about the quantity and quality of protein in the diet of the community The question, however may properly be asked Do the members of the community in their daily lives accept these values? They do not As Terroine says with a fair measure of truth, "it is a melancholy reflection that, as physiological knowledge advances, the dietary practice of civilised man tends to become more and more irrational, the more so, the higher the standard of living" There have been many changes in the dietaries of the people, even since the days of our grandfathers, both of those well endowed and of those less well endowed In the first case there has been a most commendable reduction in the amount of food, in large measure protein, consumed And among the less well endowed there has been, whenever possible, an increase in the consumption of protein, mainly in the form of meat

Does hard manual work increase the need for an enhanced intake of protein? We constantly meet the demand of the heavy worker that, if he is to do his work well, he must have a good allowance of protein, usually in the form of meat And yet at the same time there is the evidence of many investigators to show that the performance of very hard muscular work, provided the energy expenditure is covered, does not lead to any, or at the most a small, utilisation of the protein-rich muscle tissue, as evidenced, at any rate, by the output of nitrogen in the urine This conundrum has intrigued me for the last thirty years at least There is no question about the demand for meat by the man engaged in hard muscular work, be it the carrying out of his daily work or in the participation in sport, as evidenced for instance by the comprehensive inquiry made of the athletes taking part in the Olympic Games in 1936 The demand is clear but the why and wherefore is, to say the least of it, obscure Is it possible the small, if any, increase in the output of nitrogen in the urine, provided the energy needs are covered by an adequate supply of carbohydrate and fat, is not a real index of the metabolic changes which are taking place in the body? It will be agreed that it is highly improbable that any tissue can be in a state of extreme metabolic activity for considerable periods without exhibiting some signs of wear and tear, which, normally, would be indicated by a rise in the output of nitrogen It is possible that the breakdown does take place, but the nitrogen does not appear in the urine because resynthesis has taken place Or, on the other hand, is the demand for increased meat not in reality a demand for more protein *qua* protein? Meat differs from the bulk of the proteins in that it is practically always associated with a tasty mixture of non protein but nitrogen-rich extractives which account for the flavour of meat Beef, which is rich in these tasty extractives, is generally preferred to mutton These extractives, although they may have little or no protein sparing properties, are certainly amongst the most active stimulants for the flow of gastric juice Hence a high proportion of meat in a necessarily energy-rich diet may be demanded as an adjuvant, either to assist by giving flavour to the diet, the bulk of which will be made up of less well-flavoured carbohydrate and fat, or to assist the digestion of this mass of food through stimulation of the flow of the digestive juices Thomas, in his experiments on the biological value of proteins, was definitely of the opinion that the extractives of meat played some rôle in the utilisation of protein

Again, it is possible that the well-known specific dynamic action of proteins is of very real use either in stimulating the other accessory metabolic processes, or the specific dynamic action which we can only recognise as increased heat production plays some profound but so far undetected rôle in metabolic exchange Meat certainly possesses stimulating properties Or, again, it is possible that the fat which is always present in meat exerts, in conjunction with the rest of the fat in the diet, its well-known action of retarding the emptying of the stomach, and this produces a comfortable feeling of satiety and prevents the speedy onset of hunger

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Infectious Disease in England and Wales

WEEK ENDED MAY 10

Notifications —The following cases of infectious disease were notified during the week smallpox, 0, scarlet fever, 1012, whooping-cough, 4081, diphtheria, 858, enteric fever, 41, measles (excluding rubella), 11,993, pneumonia (primary or influenzal), 1002, puerperal pyrexia, 120, cerebrospinal fever, 266, poliomyelitis, 6 polio-encephalitis, 0, *encephalitis lethargica*, 3, dysentery, 69, ophthalmia neonatorum, 80 No case of cholera, plague or typhus fever was notified during the week

During the six weeks ended May 10 the weekly notifications of cerebrospinal fever maintained a steady level—335, 282, 326 309, 323 and 266 In the current week Birmingham had 10 cases the same number as in the previous week London returned 16 (Lewisham 3) as against 38 in the previous week In Scotland in the same period the numbers were 81 54, 77, 97 37 and 65

The number of civilian and service sick in the Infectious Hospital of the London County Council on May 9 was 1755, including scarlet fever 222 diphtheria 329, measles 362, whooping cough, 389, enteritis 19, chicken pox, 90 erysipelas, 53 mumps 8 poliomyelitis, 1, dysentery, 39 cerebrospinal fever 56 puerperal sepsis 13, enteric fevers 13 german measles, 13, encephalitis lethargica, 1, malaria, 2, other diseases (non infectious), 69 not yet diagnosed, 76

Deaths —In 126 great towns there was no death from smallpox or scarlet fever, 2 (1) from enteric fever, 27 (0) from whooping-cough, 13 (0) from measles, 26 (2) from diphtheria, 39 (5) from diarrhœa and enteritis under 2 years, and 19 (0) from influenza The figures in parentheses are those for London itself

One fatal case of enteric fever was reported from Greater London and another from Rhondda There were 6 deaths from whooping cough at Manchester 4 at Liverpool and in the same week Glasgow reported 14

The number of stillbirths notified during the week was 203 (corresponding to a rate of 39 per thousand total births), including 14 in London

onsible and fair-minded public man from the country, representatives of the trade-unions and the ployers

ir Francis Fremantle said the C M W C (of which was a member) welcomed criticism He emphasised t the committee was not the British Medical Associa- It was set up by agreement with independent ies like the Royal Colleges of Physicians and Surgeons direct representation was given to those outside ies He thought it was probably the most repre- tative body of the medical profession that could be ained It was obviously better that these matters uld be dealt with by the profession as a whole rather n by a Government department The C M W C was een on using the services of alien doctors as anybody it was not so easy as it might seem to employ them the first place most of them could not talk English there were few openings in research and laboratory k But as opportunity offered they were being fitted in

'rof A V Hill, F R S said this country had been expectedly fortunate so far in the matter of our public lth But already our medical resources were taxed the utmost Even in ordinary times we should not e more than half to two-thirds of the doctors needed he families of insured men were to be treated as well the men In war-time, even more than in peace, we l to think ahead and not merely treat disease when had already occurred Every year 3000 deaths from htheria, and 60,000 cases, could be abolished if we thought ahead and if doctors were available to carry the necessary immunisation But if we were to id disease treat the wounds of war disease resulting m fatigue from temporary food deficiencies and from normal conditions due to enemy action, then far more tors were needed We could only welcome with titude the promise of the United States to send 1000 tors to help us But in view of our need it seemed him appalling that we should have 1300 doctors from rope unemployed out of the 1400 available The ry that our people would not accept them and that r hospitals did not want them seemed to be nonsense ny of these doctors spoke English well enough and people who raised these objections were often guising their own prejudices by referring them to the mmon people

Miss F Horsbrugh parliamentary secretary to the nistry of Health assured the House that there was complacency on the part of the Ministry about the ployment of alien doctors They had to make certain at the doctor, if he was to go into our hospitals, had ill and that his training had been what he professed to be It was also necessary to make sure that he was ral to this country She admitted that the machinery d worked too slowly, but it was not so bad as had been eged The number of alien doctors was 1350 and now 0 or 250 were being employed At present the mbers coming through from the Home Office were out 100 a week Many of these doctors were specialists, d it was not always possible to employ them in their n specialty The need today was principally for ctors to fill junior posts in hospitals and some of these en doctors would not be suitable for that It had been ggested that local committees should be set up to deal ith the distribution of doctors but that was exactly hat had been done Perhaps Sir H Morris-Jones ought that other people should be coöpted on those cal committees and that was being considered She d listened to the criticisms and she had not heard any ggestion as to how they could have a better organisa- on to deal with the alien doctors It was better that e machinery should work rather slowly than that a stake should be made about a doctor s skill or his yalty

QUESTION TIME

Medicine-Stamp Duties

In answer to a question Sir Kingsley Wood Chancellor of he Exchequer stated that the separate bill referred to in the udget speech will contain the repeal of the medicine stamp uties as well as the provisions consequential upon that peal The bill will be presented to Parliament shortly

Paper Supplies for Scientific Journals

Mr J H Wootton Davies asked the Minister of Supply hether he was aware of the refusal of the paper control to control the supply of paper to newspapers and periodicals in such a way as to give a reasonable preference to those publishing scientific and educational matter and important news as opposed to those which could not be held to provide anything more than diversion and entertainment, and whether he would investigate this matter with a view to ensuring a better use of the available paper supplies —Sir Andrew Duncan replied The limited supplies of paper available are allocated among the various existing newspapers and periodicals according to their previous usage and it is not for me to judge the comparative merits of their contents

Horseflesh as Food

Colonel W H Carver asked the Parliamentary Secretary to the Ministry of Food whether he was aware that a certain admixture of horseflesh with beef was taking place in various articles of popular consumption, whether, if such admixture was small, it needed to be specified on the container or whether it could be regarded as a permitted amount of adulteration —Mr E Brown Minister of Health, replied I understand that, to some extent, the practice referred to is being adopted Apart from the general provisions of the Food and Drugs Act 1938, for the protection of purchasers, including those relating to labelling the act contains detailed provisions relating to the sale of horseflesh and articles of food containing it, the administration of which is a matter for the local authorities I have no authority to interpret or dispense with the statutory requirements

Grievances of Scottish Male Nurses

Replying to a question Mr T Johnston said the conditions for transferred male mental nurses in Scotland have now been assimilated to those applicable to similar officers in England and the provisions operate retrospectively from the same dates The new conditions briefly state that where a married officer is required to transfer his home he will be paid £1 1s per week or be provided with free billeting and that officers who can arrange to remove their homes will be refunded their removal expenses In addition there are allowances to unmarried officers who have continuing liabilities

Vaccination Deaths

In answer to a question Mr Brown announced that the number of death certificates received during the year 1939 where vaccinia or vaccination was mentioned or the death was attributed to vaccinia or vaccination, and the ages in each case were as follows Non civilians, 1 at 20 years, Civilians 1 at 4 months, 1 at 31 years

Deaths from Smallpox

In answer to a further question Mr Brown said that the 1939 smallpox case was notified in the Liverpool port health district and the one in 1940 in the port health district of Southampton The Southampton case was vaccinated in hospital after the appearance of the rash Information as to the vaccination of the Liverpool case is not available

Family Allowances

In replying to a question from Miss E Rathbone on a state scheme of family allowances, the Chancellor of the Exchequer said that an estimate had been prepared of the cost of paying an allowance of 5s a week in respect of each child under 15, and the matter was being investigated

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A Hospital for A R P Workers —Mrs Joan Woollcombe's country hospitality scheme has passed many a civil defence worker from the front line of the blitz to peaceful homes in the countryside for a few days of very necessary rest But frequently more than a few days' relief must be found and for this purpose the first convalescent hospital specifically for A R P workers, planned by Lord Horder and Mrs Woollcombe, has been set up by the War Organisation of the Red Cross and St John It was opened on May 15 by Field Marshal Sir Philip Chetwode who hoped that it might be the forerunner of similar hospitals throughout the country It lies in a Buckinghamshire village, and the Misbourne, a stream famous for its disappearing trick over long stretches in a dry summer, meanders through its grounds The youngest part of the village church is 15th century and the farm owned by Turstin Mantel in the days of our last successful invader is still Mantel s Farm For those in dire need of peace and quiet as well as treatment to restore them to health it is difficult to think of a happier choice within so short a distance of the front line drawn up outside the church hall Scrutiny proceeded amid silence, except for a low muttering from the officer and the periodic rattling of rifle-bolts Occasionally snatches of conversation floated over the heads of the soldiers as the C O and the sergeant made their way from man to man " . . . safety-catch . . . oily rag . . . all that muck . . . " On the extreme left there were three of us who had not yet qualified for rifles, but the C O cast a critical eye over our other equipment As he stood facing me I fixed my gaze on the row of service ribbons on his tunic, and I could almost feel his penetrating stare while his eyes passed from forage cap to jerkin and from jerkin to boots and gaiters It was at that moment that I saw his jaw protruding in prognathic fashion and his eyes screwed up to signal disapproval The sergeant, sensitive to the smallest gesture of his commanding officer, looked down at my feet I restrained the impulse to abandon my stance, but with that acumen born of clinical practice I sought an explanation by taking a sidelong glance at the sergeant's face There I saw unmistakable evidence that something was amiss His facial contortions were those of a patient when the doctor's icy hand descends on an unsuspecting abdomen There followed a muttered conversation between the C O and the sergeant and then they moved down the rank In a couple of minutes I heard them walking behind the front rank to regain the head of the platoon As they pass me, the C O stopped and hissed something into my ear that made me feel as though I had just inhaled a full dose of amyl nitrite "You've got your gaiters on back to front!"

* * *

Last night, looking at one episode in a vast battle with my binoculars, which brought it twelve hundred times closer, I spied a neutrophil, like some Pompeian warrior fixed in time, decorated with five pairs of gonococci, and fell to wondering Did any doubts ever assail him, deflecting him from his duty? Did he say would that I were an eosinophil which is a reserved occupation, or in the lymphocytes which are the Home Guard? Did he think of the honour of his old home in the bone-marrow, of the school where he was a myelocyte? As he went into the fray did he fling recrimination back into the lymph stream, saying it was that cortical cabinet that got us into this war, they had no control over the thalamus, they are hormone addicts, they are senile, sheltering behind Fischer's platelets, they are poisoned to obstinacy and complacency by the toxic spawning of the columnar epithelial cells? No, I think not He went into the fight with keenness, flinging his arms round each foe and his ferment into the struggle, reckless with his allotted span of twenty days As a fresh-run salmon leaps in cleanness, as a tern darts to his quarry, as any creature does that for which a million centuries have perfected it, so gloriously did this warrior fight on the urethra. I salute thee my—no, somebody else's—servant

* * *

Having taken to horticulture late in life and then only under the stress of war, I do not aspire to climb very high in that profession , indeed, I shall be content if, after a promising start as a general labourer, I may be permitted to work my way not so much up as sideways It is my privilege to toil and sweat under the critical eye of a gardener who is not only a tiger for work but also apparently omniscient I think that he suffers (if I may coin a phrase) from an inferiority complex, for he is constantly telling me that he can turn and break ground more rapidly and till it more neatly, not only than I can (which would be damning himself with faint praise), but than anyone else in the world I strive hard to win his moderate approval, to secure for myself a modest pat on the head, but so far without success "I could do it in 'arf the time, doctor," he said one day while watching me fork and clean a most uncompromising piece of virgin ground "And so you ought," I retorted, a trifle nettled "I'd like to watch you handle half a dozen tricky confinements" This silenced him for a time, after he had grudgingly conceded that 'twas every man to his trade But his omniscience and omnipotence are not restricted to gardening Even the astonishing course of the current war has occasioned him no surprises After every major episode, especially the more unpleasant ones, he produces the same formula "'Tis turned out zackly as I said 'twould be, doctor What I can't see why our chaps don't ——" and here follows some masterpiece of offensive action such as razing Berlin to the ground overnight or invading Italy "They ought to ask you to give 'em a hand, Bill," I reply with becoming gravity A deprecating smile overspreads his features "Ah that's wad Missis says 'Er gets proper wicked wi' me I doan know why you doan go out and 'elp 'em, er says, you're sich a bliddy know-all" I take off my hat to Mrs Bill But he's been foxed at last He actually admitted to me that he did not expect Rudolf Hess to bale out over Scotland Frankly, I am disappointed

Parliament

THE recent appeal for American doctors to help us has made us all stop to think whether we are really making the best use of our doctors here, men and women, British and foreign In the House of Commons on May 13 Sir HENRY MORRIS-JONES frankly said that he thought there had been a good deal of chaos and muddle in the treatment of alien and allied doctors Incidentally, he said the term "alien doctor" often gave offence We spoke of the Allied forces but we called individuals aliens The scarcity of doctors resulting from war conditions had been aggravated by maldistribution, and last January the Government had recognised the principle that foreign medical men should be used when they passed the temporary registration regulation This decision had been confirmed by the Robinson Committee who indeed recommended that the employment of foreign doctors in the services should be further extended But so far out of 1400 available roughly only 100 foreign doctors had found employment in this country He asked for an explanation of this dilatoriness No doubt there had been a little lack of good-will on the part of the medical profession and hospitals, but if it had been put to our hospitals that alien doctors were ready to offer their services he was sure that they would have accepted them The fault lay in the multiplicity of departments, and serious delay at the aliens department of the Home Office was the crux of the hold-up At the present rate it would take three years to absorb these alien doctors After accepting an applicant the hospital authorities communicate with the Central Medical War Committee, which then sends forms to the hospital and to the applicant The C M W C reports the application to the aliens department of the Home Office which sends out more reference forms, and when the department gives its O K —after a delay which might be as much as two months—the form is returned to the C M W C to be sent by them to the General Medical Council for final confirmation Eventually the form goes back once more to the C M W C , which communicates with the hospital and finally the hospital communicates with the applicant The House was not surprised to hear that the supply of forms at the C M W C had now run out and was causing further delay Sir Henry asked members if that was the way for a great nation to carry on its affairs Was it any wonder if alien doctors felt rather sore? He was a great believer in an Anglo-American union, and he made a plea that the enthusiasm of the Americans should not be blunted by the obtuseness of the English official mind They should not be discouraged by being put in the R A M C to clean instruments for a few hours a day But we should not shout from the housetops about asking 1000 American doctors to come here while we were doing an injustice to alien medical men who had been amongst us for so long, and to refugees who had had to leave their homes

Our medical man-power was very badly distributed In rural areas it was often impossible to find a doctor to attend even a confinement The public were uneasy when they could not get medical attention in a civil area and owing to the peculiar character of this war the R A M C seemed to have an avaricious appetite for medical personnel, although there is not much work for them to do The C M W C had done valuable work, but the situation had got beyond them He urged the Minister of Health to review the distribution of medical men and women He should appoint committees in each county or in each county borough of over 250,000 population, composed of a representative of the B M A , a

I am not in a position to express any opinion as to whether such solutions are greatly superior to water in dealing with incendiaries and the fires caused thereby but I do express the opinion that, unless this be so the possible dangers involved from their use are such that it would be most undesirable for the public to have unrestricted use of them

St Mary s Hospital, Paddington G ROCHE LYNCH

SULPHADIAZINE

SIR —The clinical trials with what you call in your annotation of Feb 15 a promising new sulphonamide —sulphadiazine—have exceeded much of the original hopes for it It has been found to be exceedingly well tolerated by the human body, much better so than sulphathiazole or sulphapyridine Whether or not it is inherently more active as you have pointed out, is questionable, but higher blood concentrations are well tolerated in man as was suggested by the experimental work with animals This has resulted in more effective action on the ætiological agents of the various infections in which it has been used These have included pneumococcal, streptococcal, Welch bacillary, staphylococcal and Friedländer's bacillary infections The effect of sulphadiazine on refractory cases of gonococcal infections in man is being investigated by Dr Hugh H Young and his co-workers at the Johns Hopkins Hospital Experimentally type A as well as type B Friedländer's bacillary infections have been successfully treated with sulphadiazine Experimentally, also, the work in progress at the school of medicine of the University of Rochester indicates that sulphadiazine is much more effective in the treatment of Welch bacillary infection than any of the other sulphonamides This infection was produced in dogs in such a manner that it very closely simulates gas gangrene as it is found in the field

Stamford Conn U S A W HARRY FEINSTONE

"SCIATICA"

SIR,—It was gratifying to note that Dr Walshe agrees with me in stressing the frequency with which sciatic neuritis is wrongly diagnosed The diagnostic criteria which he lays down for this complaint such as "pain along the course of the nerve pain on pressing or stretching the nerve, pain and tenderness in muscles supplied by it," were however present in my 70 cases, and it was precisely these signs that had led to the diagnosis of sciatic neuritis by various doctors whose competence cannot be doubted These signs are so familiar to us all, that in my case-reports they were for brevity covered by this single term "sciatica" The fact that Dr Walshe still regards these signs as reliable evidence of neuritis shows a happy disregard for the mass of original work which has been done on this subject during the past 30 years, and suggests that the diagnosis of sciatic neuritis will continue to be made with great frequency

Leavesden Hospital J H KELLGREN

ENDOCARDITIS LENTA

SIR,—May I ask Dr Parkes Weber in what way his case of subacute bacterial endocarditis and the others mentioned by him, differ from the well-known clinical picture of the bacteria-free stage described by Libman (*Amer J med Sci* 1913 146 625) I have seen at least one case recently in which the blood-culture was repeatedly negative and even at autopsy bacteria were not found in the vegetations Neither heparin nor sulphonamides were used in this case In reviewing cases of endocarditis lenta it should be remembered that spontaneous remissions occur and that the disappearance of organisms from the blood and heart valves in no way negatives a fatal termination to the disease

Westminster Hospital MAGNUS HAINES

CARBON MONOXIDE

SIR —In the official memorandum on Gas Casualties printed in your issue of May 10 (p 613) should not the first sentence of the concluding paragraph, which reads "The gas mask if adjusted properly and in time gives full protection to the lungs and eyes against all these gases" have added to it the words "*except carbon monoxide*" ?

Oxford A G SANDERS

Obituary

GEORGE THEODORE ROBERTSON WATT

M B ABERD , SURGEON LIEUTENANT R N V R

Surgeon Lieutenant G T Robertson Watt is reported to have been lost during the evacuation of the Imperial Forces from Greece, and the Admiralty have intimated that he must be presumed to have been killed on active service Watt, who was in his 29th year was the eldest son of Mr Theodore Watt, LL D managing director of the Aberdeen University Press, and Mrs Watt of Culter House Aberdeenshire He spent 13 years at the Aberdeen Grammar School and during his last year he was a prefect He graduated in medicine at Aberdeen University in 1936 and became assistant to Dr George Mitchell of Insch The following August he was appointed a resident medical officer at Aberdeen Royal Infirmary Later he became house-surgeon at Mount Vernon Hospital at the Aberdeen Maternity Hospital, and at the Jessop Hospital Sheffield, for he had already determined to specialise in obstetrics and gynæcology In June of last year he was commissioned as a surgeon lieutenant in the R N V R , and shortly afterwards was posted to H M S *Wryneck*

Elliott & Fry

L F writes George Watt had a wide interest in student activities but was happier breathing the free air of the Cairngorms than on the organised playing-field He was willing to fight and die for his country knowing that liberty itself was in jeopardy but had he been spared to see his country victorious he would still have fought on for the creation of peace and unity among nations His vision was the wide vision of youth

JOHN MURDOCH McKILLOP

M B GLASG , LIEUTENANT R A M C

Dr J M McKillop was educated at the Kelvinside Academy and Glasgow University He was a young man of powerful physique, keen on all sports At school he played rugger and he was an enthusiastic yachtsman , for many years he competed in the Loch Long dinghy class He qualified M B in 1938 and held resident appointments at three of the corporation hospitals — at Stobhill Hospital he was house-physician to Prof Noah Morris McKillop was a careful worker and his frankness combined with a well-developed sense of humour made him popular with his patients He joined up as soon as war was declared and he served as a lieutenant in the R A M C attached to the 2nd battalion of the Seaforth Highlanders He went to France in October 1939, and on June 11 1940 he was wounded at Ingouville-sur-mer Seine He died the same night

Weir Glasgow

Murdoch McKillop was the only son of the late Mr Jack McKillop and Mrs Nora McKillop He was 26 years old

The Minister of Food has made an order to come into force on June 2, prohibiting except under licence, the manufacture or sale of vitamin C The order does not apply to the manufacture or sale of vitamin C for medicinal, pharmaceutical or scientific purposes Applications for licences should be made to the Ministry at St John's College, Oxford

Letters to the Editor

"EFFORT SYNDROME"

SIR,—There have recently been many learned and careful articles on effort syndrome in the medical journals. If one's experience were limited to reading these alone, one would come inevitably to the conclusion that effort syndrome was a definite common disease, that was created in the beginning, walked out of the Ark, and brought forth after its kind. The Oxford dictionary definition of syndrome is "a concurrence of several symptoms in a disease," so that if the word syndrome is used one is justified in assuming that it represents a definite disease process. However, one's experience is not limited to the journals. One sees patients. And here I would like to put forward a purely personal point of view, which may arouse some disagreement; but I do not apologise for it, for it is sometimes profitable to question the value of established concepts. In seven years of very varied psychiatric practice I have never seen a case of effort syndrome. Since the beginning of this war I have been constantly seeing Army and Air Force patients, and though looking for the condition I failed to find it. Had I been missing it? In view of its importance as judged by the press this seemed extremely odd. Had I lost my ability to diagnose patients and correlate my reading with clinical experience? Or perhaps I was calling it something else, or again, even more rebellious thought, perhaps there was no such thing. Obviously the latter view was most pleasing to me, and hence this letter a mere popgun (or sling?) breathing a brief defiance at some of the heaviest artillery which it is the pride of the medical profession to muster. After all, did not Group-Captain Symonds recently beard the psychologists in their own den? I will take courage and proceed. Even a psychiatrist is entitled to do his bit of bearding.

To elucidate this problem I thought of several cases I had seen which might have been diagnosed as suffering from this mysterious complaint. One in particular impressed me. Let us call him "The Marine who was Angry."

I was called to see a 24 year old marine, a burly well built fellow, complaining of tremor, palpitations, pain over his heart and excessive sweating. Instead of diagnosing effort syndrome however, I had taken a history which led to a rather different conclusion. A healthy and somewhat hot tempered fellow, he had carried out his duty on board his ship in the Indian Ocean until 5 months previously. He had lent £4 to a mate who had failed to return it. A fight resulted. He was brought before the captain who said that not only had he disturbed the ship with brawling but he had also broken regulations by lending money. Discipline must be preserved, he would therefore forfeit the money and do ten days C.B. The marine did his punishment, but with black rage in his heart. On ending it he went on parade. The officer inspecting stopped opposite him and said "Look at this silly fellow (or words to that effect). What do you mean by coming on parade with long hair like a girl?" The marine trembled, his heart raced, he sweated from every pore in his body, he grasped his rifle, he raised it a little from the ground to bash the officer for such an ill timed insult. But fortunately he restrained himself. The palpitations and the sweating and the trembling however recurred whenever he was with an officer, especially that officer. This was noticed, and he was asked what was the matter. Not considering it tactful to reply, "Because I want to bash you, Sir," he said he just felt bad and trembly. He was sent to the M.O., an officer in whose company the symptoms persisted. He was put in a shore hospital in Africa. A physician there demonstrated him before five students as a case of Graves's disease, saying that he would never be well until he had his thyroid out. This gave the marine food for thought. He was obviously really ill. He began to suffer from choky feeling, pain round the heart and thought perhaps he had heart trouble too. Fortunately no surgeon could be persuaded to attack his throat, and during the next four months he gravitated slowly, through many hospitals, to England.

His mental state when I saw him could be summarised as one of pent up fury. An opportunity to tell his story, general appeasement, and release of some of his anger, helped him greatly. It was at first difficult to persuade him that he was not really ill, but demonstration as a case not suffering from Graves's disease or heart disease, in front of fifteen student finally persuaded him of his healthiness. There were many other difficulties about which he needed help, such as his desertion by his mother at an early age, his early struggles in an orphanage, his intolerance to authority, his sensitivity to criticism and his intention never to marry because his mother had failed in her duties. One could give these psychological factors names like frustrated Oedipus complex or over compensated inferiority complex, if one had a taste for jargon, but it would serve no useful purpose. Nor does it serve any useful purpose to call his bodily symptoms by the name "effort syndrome." Simple psychotherapy on the above lines enabled him to return to duty within three weeks with his aggression directed to more useful channels and unlucky would be the German foe who should cross his irate path.

There are many similar cases to this. This man was not suffering from any disease at all, except perhaps what Mr. Russell Howard used to call "iatrogenic" or doctor-produced disease.

The symptoms of the anxiety state are protean, but it is surely illogical to split off the cardiac symptoms and dignify them with the high sounding term "effort syndrome." Why not gastric syndrome, head syndrome, abdominal syndrome? I would suggest that the effort syndrome represents no disease at all. It is only an idea, an idea which served a useful purpose in the last war, but it is now an idea which has outlived its usefulness. Cannot all the cases at present classified as effort syndrome be more reasonably diagnosed as (1) suffering from anxiety state, (2) post-infective neurocirculatory asthenia—e.g., after 'flu, (3) undiscovered organic disease, such as sinus infection, early tuberculosis, or even cardiac rheumatism or syphilis, (4) cordite poisoning, (5) weedy fellows who can't do much at all? Effort syndrome, in fact, is strictly analogous to the term "vapours" as used in the eighteenth century to cover conditions such as early tuberculosis, vaso vagal attacks, petit mal, hysteria and tight corsets.

Guy's Hospital. FELIX BROWN.

PITUITARY SHOCK

SIR,—Your leader of May 10 on pituitary extract in obstetrics reminds me of an experience some years ago. I was called out to see a case in a so-called twilight sleep maternity home where the night nurse, through ignorance or carelessness (or both), had been giving the patient, instead of hyoscine hydrobromide gr. 1/400, an injection of pituitary extract 1 c.cm. every hour for at least four hours. I found the patient profoundly shocked. Her face was cold and clammy; her pulse was rapid, about 160 and of small volume; she had sighing respirations. The uterus was in tonic contraction. She was obviously suffering from pituitary shock, and I thought we were going to lose her. The foot of the bed was raised by placing it on the seat of a chair, hot water bottles were placed in the bed and extra blankets added, and hot tea with plenty of sugar was given by mouth. In half an hour her condition had improved and next day, with the aid of a little chloroform to relieve the terminal pains she gave birth to a full-term child which seemed not to have suffered in any way.

London, N.1. C. HORWITZ.

ZINC CHLORIDE FOR FIRE FIGHTING

SIR,—It has come to my knowledge that solutions of zinc chloride are being sold to the public for attacking incendiary bombs through the stirrup hand-pump. I am informed that these solutions contain about 70% of zinc chloride, and it seems right to issue a warning against the use of such solutions, especially in confined spaces. Zinc chloride in this strength is a corrosive poison, and if some of it got into the eye it would be extremely painful, it would produce temporary blindness, thus immediately incapacitating the operator of the pump, and even if effectual treatment was applied at once permanent damage would be likely to result.

I am further informed that when these solutions are brought into contact with burning magnesium, fumes of hydrochloric acid and zinc chloride are evolved. If such fumes are inhaled there may be serious effects in the respiratory passages. Finally, if such solutions come into contact with the skin and are not washed off they may cause skin lesions.

Notes, Comments and Abstracts

THE IMPETIGOCOCCUS

By R E Hope Simpson, M R C S

May 21 of this year marks the diamond jubilee of a modest paper by Radcliffe Crocker (1881) on the "Contagium of Impetigo Contagiosa" This was the prelude to a problem which is not yet solved This is remarkable because since 1864 when Tilbury Fox clearly described *impetigo contagiosa, no disease has been more readily* recognised or more easily treated and few present such abundant material for study in such an accessible situation The failure is at least in part attributable to the diversion of the investigation along two side-lines concerned to decide first, whether the causal organism of impetigo contagiosa is a streptococcus or *Staphylococcus aureus*, and secondly whether or no pemphigus neonatorum is the infantile form of impetigo contagiosa These diversions could have been avoided if the investigators had held clearly in mind an important preconception imposed by the natural history of the disease

Tilbury Fox himself searched unsuccessfully for organisms in the fluid from the vesicles and American and continental workers were only able to record the occasional presence of fructifying fungi in the crusts These *fungi Crocker discounted as contaminants* and used a capillary tube to withdraw fluid from the unruptured vesicles a method developed successfully twenty years later by Sabouraud Crocker described and illustrated "chains of micrococci" from immediate examination of the fluid This was three years before Fehleisen's recovery of the streptococcus from cases of erysipelas Crocker cautiously admits that further observation culture and experiment are required to establish his organism as causal of impetigo contagiosa Nevertheless the battle was on, a germ had been specified, and Crocker must rank as the first sponsor of the streptococcal theory Since that date the fight has had its remissions of a dozen years or so when the issue seemed settled but each time discussion has broken out afresh One such remission occurred after 1900 when the streptococcal basis seemed established Another period of quiet is with us now, with the *Staph aureus* uneasily enthroned

An *opposing* claimant to Crocker's organism appeared when Balzer and Griffon recovered a staphylococcus from the lesions of impetigo contagiosa But later (1897) they repeated their work, discovered technical imperfection and once more incriminated the streptococcus Almost immediately Sabouraud entered the lists with hot championship of the *Staph aureus*, but he too repeated the work of Balzer and Griffon, and in a series of papers (1900) *generously admitted* his errors, commended the work of Balzer and Griffon to his colleagues, and with elaborate care attempted to establish the claim of the streptococcus His two warnings are worthy of reproduction examine early or you will find the secondary invader, and solid media (which he details) favour the growth of the common skin invaders—incubate them at 37° C and next day the tubes will be covered with yellow colonies, "resultats faciles et faux" He also notes how rapidly various cocci appear in the fluid in a blister raised by a burn

The researches of Sabouraud seemed, in spite of a few hostile critics finally to settle the matter, and when others had confirmed his work pemphigologists were left free to explore the second side issue—the relationship between impetigo contagiosa and pemphigus neonatorum This produced a crop of papers such as that of Whitfield who in 1903 described pemphigus neonatorum in an infant whose mother was suffering from impetigo In the same year Adamson maintained that pemphigus neonatorum was the *infantile* form of the impetigo of Tilbury Fox Three years later Clegg and Wherry suggested the term "pemphigus contagiosus" to cover the disease whether it appeared in adults or in infants Despite a few dissentients the relationship was at that time generally accepted as established, and the causal organism was supposed to be a non-specific streptococcus

In 1927 Falls broke the interval of peace by reasserting what he had earlier stated (1917), that he had isolated *Staph aureus* from the lesions of pemphigus neonatorum, and that his organism fulfilled Koch's postulates This reinforced the conclusions of McCandlish who two years earlier had inculpated the *Staph aureus* in his report on 224 cases of "impetigo of the newborn" Most workers since then have supported these findings but the text-books I have sampled seem uninterested in the matter (Park and Williams 1929 Stitt 1941 Whitby 1928) Muir and Ritchie (1937) in a paragraph on diseases caused by hæmolytic streptococcus, dismissed the point with these words "Impetigo is generally attributed to these organisms"

A SPECIFIC CAUSAL ORGANISM

In my view the causal organism of impetigo contagiosa is an organism special to that disease This conclusion can be reached without recourse to the microscope by anyone who has opportunity to deal with impetigo It is based on the following facts

1 Impetigo contagiosa is a clear-cut clinical entity of which recognition is usually easy Atypical cases occur, but not more often than in most diseases

2 It breeds true Case follows case with the uniformity of measles Contacts of impetigo *contagiosa do not through* this infection primarily develop furuncles, erysipelas, cellulitis, or osteomyelitis Nor do erysipelas, cellulitis, furunculosis, carbuncle osteomyelitis or scarlet fever ever give rise to impetigo contagiosa

3 It has a definite pathological picture, and involves a precise anatomical location for its lesions

4 Impetigo contagiosa can be readily and uniformly cured by measures which will not affect other staphylococcal and streptococcal conditions

Were we informed that the causal organism of measles had been discovered to be simply the streptococcus of scarlet fever, unworthy of species differentiation we should be certain that the conclusion was erroneous Nature provides indisputable evidence, both for measles and for impetigo contagiosa, that there is a germ in a measure peculiar to each of those diseases Whatever their behaviour, tinctorial or *cultural, outside* of their natural habitat these are specific organisms Yet Sabouraud gave it as his opinion that the streptococcus of impetigo is not special to impetigo but is "the typical Fehleisen streptococcus of erysipelas, &c" Such a misconception is astonishing in such a clinician The situation of pemphigus neonatorum is perhaps less clear, but it is instructive to quote Falls (1927) that the organism which he recovered from this disease "was culturally and tinctorially indistinguishable from a staphylococcus recovered from an ordinary boil" On another occasion however, he notices certain peculiarities of this coccus, particularly that its morphology varies on different culture media, but "these differences," he concludes, "do not seem sufficient for considering the pemphigus coccus as a different species"

There is more direct evidence of the *specificity of the* coccus of impetigo For several years I have examined direct smears, Leishman and Gram stained, of vesicle material *from many* hundreds of cases of impetigo contagiosa These, with great regularity, show the presence, often in large numbers *of strongly* gram-positive diplococci, many of which lie in the cytoplasm of the polynuclear cells Short chains and other formations are seen extracellularly, but the characteristic finding is of these gram-positive intracellular diplococci So reliable is this finding in typical uncomplicated impetigo that it has become for *me* a routine test in the rare atypical cases and has proved its usefulness The observation that the diplococcal form is the natural *morphology* of the organism of impetigo is by no means new, priority is usually given to Demme (1886) but Demme's diplococcus was recovered from a case of pemphigus acutus investigated for its rarity

Clegg and Wherry (1906) described 5 cases of pemphigus neonatorum and 1 of "pemphigus contagiosus" from which diplococci "similar to those described by Almquist were recovered Superficial examination of cultures of this organism might lead, they said to confusion with the *Staph pyogenes aureus* though direct smears from the lesions showed well-defined kidney shaped diplococci Cultures did not produce indol in broth, *and the diplococcus* form reappeared in subculture in milk, or better in serum broth The one

IRELAND

A HOSPITAL BED BUREAU FOR DUBLIN

A BED bureau for the hospitals which have received grants out of the Hospital Trust Fund will shortly be set up in the Dublin area Under the Public Hospitals (Amendment) Act, passed just a year ago, the Hospitals Commission was empowered to establish this organisation, the thirty hospitals concerned have each had the right to nominate a member of the advisory committee which framed the regulations for the control of the bureau, which now only await the approval of the Minister to come into force

The bureau will probably be located in the office of the Hospitals Commission, and it will know the vacant beds available at each of the hospitals Applications for admission should be supported by a recommendation from a medical practitioner, giving the age and sex of the patient, and a provisional diagnosis In an emergency this procedure will, of course, not be required The applicant will be asked to name the hospital to which he would choose to be admitted and the member of the staff under whose care he would wish to be placed If, from lack of accommodation, his choice cannot be satisfied, he will be informed of any alternative accommodation available The prospective patient or his medical attendant will, therefore, be assured so far as possible of a free choice of hospital and member of staff To begin with the bureau will operate only during the day, but later it is hoped to maintain a twenty-four hour service

At one time there was some anxiety lest the regulations would encourage interference by the Hospitals Commission with the independence of the voluntary hospitals, but it is understood that this point has been met Other difficulties, however, remain, and the current number of the *Journal* of the Irish Free State Medical Union remarks editorially "The real obstacle to the efficiency of the Dublin Bed Bureau is not likely to be any friction between the Commission and the hospitals but the crude fact that there is and will be a gross shortage of hospital accommodation"

A HOSPITALS SWEEPSTAKE

The draw of a further hospital sweepstake, held in connexion with the Irish Lincoln Handicap, was held on May 10, and the hospitals benefited by over £7800 This is a small sum compared with the results of the sweeps in earlier years, but the decline is not surprising The wonder is rather that it is possible to hold a sweepstake with any success The hospitals, however, are glad to get what they can, and are loth to let the machinery pass with disuse It was announced that another sweep would be promoted this autumn

Births, Marriages and Deaths

BIRTHS

BROCKINGTON —On May 14 the wife of Dr Fraser Brockington, of Leamington Spa—a son

HOUSE —On May 12, at Carmarthen, the wife of Captain R J House, R A M C —a daughter

VAIZEY —On May 11, the wife of Dr J Michael Vaizey, of Tycehurst Hill, Loughton Essex—a daughter

WENGER —On May 10, at Leicester the wife of Mr Reginald Wenger, F R C S E —a daughter

MARRIAGES

FISHER—CORBETT —On May 10, at Portland, Herbert Holdrich Fisher, surgeon commander, R N, to Venice Margaret Corbett

FRAULO—HAMILTON KEENE —On April 26 in Cheshire, Joseph Fraulo, M R C S, of London to Marguerite Hamilton Keene

DEATHS

AHERN —On May 10, in Dublin, Michael David Ahern, O B E, L R C P E, lieut colonel R A M C retd

POE —On May 12, in Edinburgh, John Poe C M G, D S O, M B Dubl, colonel R A M C retd

POTTER —On May 18, at Lochfoot Dumfries, Paul de Cressé Potter, M R C S, L S A, formerly of Leicester

POWER —On May 18 at Northwood, Sir D Arcy Power, K B E, B M Oxfd, F R C S, F R F P S, F R A C S, F S A, aged 85

ROWE —On May 16, at Wisset, Halesworth, Edmund Lewis Rowe, L R C P E, of Lowestoft, aged 81

SUTTON —On May 12, at Tunbridge Wells Alexander Arthur Sutton, C B, D S O, L R C P E, major general A M S retd

Medical News

University of Oxford

Miss Ida Mann has been appointed to the Margaret Ogilvie's readership in ophthalmology Dr C G Douglas has also been appointed university reader in general metabolism, and Dr H M Sinclair university demonstrator in biochemistry

Royal College of Surgeons of Edinburgh

At a meeting of the college held recently, with Dr H M Traquair, the president, in the chair, the following were admitted to the fellowship —

G J Cleland, M B Edin, G J A Kirkpatrick, M D Manitob F B Korkis, M B N Z, J C Milne M B Edin, D M Nundr M B Rangoon Marion A Pearson, M B Glasg, O M Spence M B Sydney, and W J Watt, M B N Z

War-time Formulas

The British Pharmaceutical Codex Revision Committee has had under consideration suggestions for adapting formulas to the position of the drug market, which has, of course, been affected by the restrictions on the importation of the vegetable raw materials of medicine The committee has made recommendations to the War Formulary Committee, some of which reflect suggestions made in M R C War Memorandum No 3 on economy in the use of drugs in war time The statement in the memorandum that economy in the use of alcohol is essential is supplemented by the direction that many tinctures can be replaced by concentrated preparations, the revision committee agrees provisionally, and is having a list prepared of the liquid extracts which might be employed The committee is also in accord with the suggestion that arachis (peanut) oil should replace olive oil in compound phenol ointment and lead oleate ointment, and should supplant almond oil in rose water ointment and white rose ointment A proposal that compound infusion of quassia should be included among the formulas as an alternative to compound infusion of gentian is approved pending the examination of samples The committee agreed to retain the monograph on solution of acriflavine, but also decided to introduce a new formula consisting of proflavine in physiological saline solution A new suspending agent is to be sought, for aspirin mixture, to replace tragacanth which is now a scarce and costly substance The following formula is recommended as a substitute for compound linctus of squill

℞ Camphorated tincture of opium	m 20
Oxymel of squill	m 20
Liquid extract of squill	m 1
Syrup to	m 60

A note is to be inserted "If liquid extract of squill is not obtainable, liquid extract of ipecacuanha may replace it" It was suggested that the use of liquid paraffin in liniment of ammonia should be avoided, but the committee decided that the use of light liquid paraffin should be permitted The following formula is to replace the existing codex formula for soap spirit caustic potash 2 8, caustic soda 2 1; oleic acid B P '29, water 31, industrial alcohol (90%) to 100, neutralised to Poirrier's blue It was agreed that the use of tap water should be authorised in place of distilled water except for injections and in cases where the pharmacist decided that it is unsuitable for a particular preparation A suggestion to alter the formula for red lotion by substituting Bordeaux B for compound tincture of lavender was not accepted Because of the shortage of materials and because there are pharmacological objections to deflagrating powders, it was proposed that compound lobelia powder and compound stramonium powder should be discarded, but this was not agreed to, nor were proposals to omit ipecacuanha from compound phenolphthalein pills, and to replace compound glycerin of thymol by a simpler formula such as the one used by the L C C

The 42nd annual meeting of the Lebanon Hospital for Mental Diseases, Syria, will be held on Thursday, June 5, at the Westway Hotel, Endsleigh Street, London, W C 1, under the chairmanship of Mr Lyn Harris, LL B Other speakers will include Mrs Somerville Smith, representative in London of the British American Ambulance Corps, and Monsieur Mathieu, formerly interpreter at the League of Nations, who will speak on the situation in Syria In spite of troubled political and social conditions, the hospital has continued its work without interruption, and 391 new patients were admitted during 1940, a higher number than ever before

ORIGINAL ARTICLES

QUANTITATIVE ASPECTS OF TRANSFUSION

BY

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(From the Regional Blood Transfusion Laboratory Cambridge)

Now that the regional services provide for the transfusion of serum plasma and whole blood on a scale hitherto impossible it is well to consider to what extent these media are quantitatively equivalent To neglect the quantitative aspects of transfusion is to risk discrediting a valuable aid to resuscitation, since there is grave danger of its abuse It must be clearly recognised that the object of transfusion in cases of hæmorrhage and circulatory shock is to restore a balance conditional for the normal functioning of all organ systems of the body and not to stimulate impaired function by a therapeutic agent in the limited sense To decide what volume can safely be transfused it is necessary to consider the dissolved protein content of the medium as well as the blood-volume of the subject, both in health and at the time of transfusion That the simple quantitative considerations set out here have for the most part been neglected, sometimes to the patient's detriment, is clear from reports which have reached us and from current literature

TRANSFUSION FOR HÆMORRHAGE AND WOUND SHOCK

Since a lasting restoration of the volume of circulating fluid to its normal value is the aim of transfusion for hæmorrhage or circulatory shock it is necessary to bear in mind what this normal value is For each stone of body-weight there is, in health, approximately 1 pint of blood, so that if the body-weight is 10 st the blood-volume is about 10 pints In health the proportion of corpuscles in the blood varies between 36 and 51% by volume. a convenient figure is 50% It follows, therefore, that of a blood-volume of 10 pints approximately 5 pints are cells and 5 plasma (4 5 pints of cells and 5 5 pints of plasma would approximate more closely to the average figures)

Although the red cells are responsible for oxygen transport, their number may be lowered considerably (or raised appreciably) without endangering life, the rate of fall, however is of moment Thus it is well recognised that the red cells may fall to 20% of the normal value in pernicious anæmia—there may be only a pint of red cells in such a patient's body—but this level has been reached slowly In an acute hæmorrhage death would result before the volume of red cells could be reduced to this level; but life can be maintained after a sudden fall from 5 pints to 3, and possibly even to 2 pints of red cells During hæmorrhage the volumes of red cells and plasma are reduced initially together, but it is the fall in the volume of plasma which produces the immediate signs and symptoms of circulatory or "secondary" shock The chief constituents of plasma are water (over 90%), proteins (about 7%) and salts (less than 1%), the first and last are easily replaced but in the absence of the second their contribution to the volume of the circulating fluid is short-lived, since they rapidly leave the circulation The proteins can only be replaced by the transfusion of serum plasma or whole blood The approximate concentrations of proteins in various transfusion media are as follows

Transfusion medium	*Percentage of dissolved protein*
Filtered serum	7
Citrated plasma (120 c.cm 2 5% sodium citrate 420 c cm blood or 120 c cm citrate and 220 c cm plasma)	4 5
Citrated whole blood (120 c cm citrate 220 c cm plasma 200 c cm cell)	3
Defibrinated whole blood (45 c cm cells 55 c cm serum)	3 7

Allowing 40 c cm for clearing air from the giving set and as waste in the bottle and tubing, each standard transfusion bottle should yield about 500 c cm of fluid to the patient if filled originally to the 540 c cm mark. The weights of dissolved protein administered in one bottle of each of these transfusion media are shown below.

Transfusion medium	*Dissolved protein per 500 c.cm bottle* (g)*
Filtered serum	35
Citrated plasma	23
Citrated whole blood	15
Defibrinated whole blood	18

* In the case of defibrinated blood one bottle filled to the 540 c cm mark yields about 480 c cm blood to the patient after defibrination with 30 c.cm. glass beads, the fibrin clot remaining in the inverted bottle on top of the beads (Harrison and Picken *Lancet*, March 22, 1941, p 405)

An acute hæmorrhage would be very severe if the patient lost 3 pints of cells and 3 pints of plasma Taking this as an extreme case 3 pints—that is 1700 c cm —of undiluted plasma contain 119 g of plasma proteins, this can be replaced as shown below

Transfusion medium	*Pints (bottles) to yield 119 g dissolved protein*
Filtered serum	3 4
Citrated plasma	5 1
Citrated whole blood	8
Defibrinated whole blood	6 6

These, therefore, are maximum values for the volume of fluid to be transfused in cases of severe hæmorrhage; they should rarely if ever be exceeded In most cases a much smaller volume will be ample

Plasma may, however be lost from the circulation both internally as well as externally It will, of course escape together with red cells if the hæmorrhage is internal, but it may also pass into injured, lacerated or crushed tissues It is difficult to assess the magnitude of this loss from the degree of swelling in the injured area, but in most cases one bottle of serum or citrated plasma or two bottles of whole blood will probably balance or more than balance, this loss We suggest that in cases of wound shock with hæmorrhage one bottle of filtered serum or plasma should be transfused quickly in 10–15 min ; this would make good a loss of approximately 2 pints of blood If there is evidence of a much larger hæmorrhage, a second bottle should be given more slowly But few patients will need more, and in no case should more than four bottles of serum or their equivalent, be administered initially If external hæmorrhage continues the loss should be estimated and the patient transfused accordingly

After the initial treatment for shock, whole blood should be used for the subsequent treatment of anæmia, the volume to be transfused being estimated from the results of hæmoglobin determinations In wound shock without significant hæmorrhage one, or at most two, bottles of serum or their equivalent of plasma should be given

DANGERS OF TRANSFUSION

Accepting these figures it may be asked whether any harm over and above wastage of protein-containing fluids, can result from the administration of serum plasma or whole blood to patients suffering from 'primary" shock only, or in a simple prolonged faint or in hysteria The answer depends on the nature and amount of the fluid transfused, and above all on the condition of the subject's heart Simple arithmetic may help again Suppose the subject weighs 10 st (63 5 kg) The plasma-volume in health is kept steady at about 5% of the body-weight (50 c cm per kg) and is substantially unaltered by a large number of diseases, even when there are gross variations in the percentage of cells The

Transfusion medium	*Dissolved protein per bottle (g)*	*Increase in circulating protein ( )*
Filtered serum	35	16
Citrated plasma	23	10
Citrated blood	15	7
Defibrinated blood	18	8

human inoculation produced typical but abortive vesicles They emphasised that its natural habitat and absence of invasiveness distinguished this organism from " ordinary pyogenic cocci " They suggested that the disease (" pemphigus contagiosus " to cover all its manifestations in infant and adult) was probably due to their organism, which should be called *Micrococcus pemphigi contagiosi*

Almquist's paper appeared in 1891, and concerns pemphigus neonatorum Before describing his bacteriological researches he gave strong a priori reasons for supposing that the pemphigus coccus was a specific organism He isolated an organism culturally and tinctorially *very similar to the Staph pyogenes aureus*, but—and here his preconception guided him—it produced a typical pemphigus vesicle when inoculated in his arm Therefore it cannot have been identical He pointed out that the delicacy of infant skin makes infants especially liable to attack, and that adults (e g , nursing mothers) are prone to modified attacks, their skins being tougher His description of adult attacks is not detailed enough for the reader to decide whether it represented impetigo contagiosa The natural form of the organism was usually diplococcal It bred true during months of subculture, and Almquist named it *Micrococcus pemphigi neonatorum* His paper and that of Clegg and Wherry should be studied in comparison with that of Falls The bacteriological findings are similar, but the conclusions are opposed [1]

This pemphigus coccus may or may not prove to be identical with that of impetigo But it should be widely recognised that impetigo contagiosa is caused by an organism as specific as is the *Neisseria gonorrhœæ* for gonorrhœa Whatever the ultimate scientific name of this organism, it deserves the semi-vulgar title of the " impetigococcus " It is worthy of more attention and of more honourable mention in our textbooks, not only because of the commonness of the infection but also because the germ itself is interesting The impetigococcus has a precise anatomical site in a constant tissue of election There it provokes a serous reaction with a mild pyogenic response, and leaves no immunity Like the gonococcus, the impetigococcus is commonly found intracellularly in the polynuclear pus cells, and such bacteria often present peculiar cultural difficulties Unlike the gonococcus, it is strongly gram-positive Inoculation of the impetigococcus into the skin of other animals does not reproduce the human disease the germ being invasive in animals Examination of the direct smear is of great assistance clinically

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A YARDSTICK FOR NUTRITION

FEW problems of modern medicine have proved more baffling than the search for a ready reckoner of nutritional status and few are more in need of solution at the present time for the pædiatrician, the medical officer of health, the general practitioner teacher, health visitor and social worker Miss Rachel Jenss, Sc D , and Dr Susan Souther [2] have made an exhaustive examination of the various indices which have been put forward for assessing physical fitness in children But, disappointingly, they are driven to conclude that these indices are *neither selective nor sensitive They find that only* full use of several well-worn methods of assessment can be expected to provide a measure of any value, and even such time-honoured methods as the clinical estimate of nutritional status, growth and development and dietary habits need to be used in conjunction with one another , singly none of them can be relied for an accurate diagnosis Thus the clinical judgme of nutritional status even by a trained pædiatrician " liable to considerable error " Their work has be done thoroughly, and though it still leaves us witho a universal measure of nutrition it has all the value o negative finding gained by careful analysis and cultu judgment

THE HANBURY MEDAL

THE Memorial to Daniel Hanbury takes the form of a g medal given periodically for " high excellence in the prose tion or promotion of original research in the natural histo and chemistry of drugs " It is to be awarded this year Mr Harold King, D Sc , F R S of the National Institute f Medical Research The adjudicating committee is made of the presidents of the Chemical, Linnean and Pharmace tical Societies, the chairman of the British Pharmaceuti Conference and one pharmaceutical chemist , their decisi was announced at the May meeting of the council of t Pharmaceutical Society, who are the trustees of the fu raised to establish the memorial The new Hanbury med list has been closely engaged in research work on drugs f nearly thirty years His important contribution to t problem of the synthesis of arsenical preparations and h work on the chemistry of alkaloids and sterols are well know His results have been outstanding in the investigation of t constitution of hyoscine, the stereochemistry of the cincho alkaloids, into the sources, nature and constitution of t alkaloids present in the various kinds of curare, and of t plants used in the preparation of that substance Some t years ago, in association with Rosenheim, he suggested a n structure for the cholic acid ring system which is now genera accepted as a basis for the representation of a number physiologically active substances, such as the œstrogen hormones, carcinogenic hydrocarbons and cardiac glucosid

Since publication of the last list of subscriptions to t Medical War Relief Fund over £1200 has been receive bringing the total to over £25,000

The Reich *Official Gazette* for May 18 announces reductio in German food rations which will begin in June T weekly meat ration is said to be going to drop from 5 grammes (about 17½ oz) to 400 grammes (about 14 oz), a families who keep a pig, cow, rabbits or poultry will allowed about 7 oz less per person weekly

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S	A	L	V	A	R	S	A	N	▨	T	E	N	S	E
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SOLUTION TO THE
LANCET CROSSWORD
OF MAY 17

Appointments

BURNETT C W F , M D Lond , M R C O G acting depu medical superintendent at Stepping Hill Hospital, Stockport

MITCHELL ELIZABETH M M B Lond resident assistant medic registrar at the Royal Free Hospital

VELLACOTT H D S M B Camb senior assistant R M O Alton Hospital, Winchester

The following examining Factory Surgeons have been appointed

FLEMING, J *B , M D Glasg Markinch Fife* ,
GATELY, G L M B Lpool Stoney Stanton Leicester ,
HARRIS, A G J , M B Camb Sherborne, Dorset , and
MILLIGAN, E H M M D Belf , D P H Longdendale an Glossop, Derby and Chester

The following Medical Referees have been appointed

INGRAM P C P , M B Lond all county court districts circuit No 24 and Aberdare and Mountain Ash Merth Tydfil, Pontypridd Ystradyfodwg and Porth an Bridgend in circuit No 30 for dermatitis and other sk diseases

LEWIS, D R , M D Edin F R C P E all county cou districts in circuit No 31 and Neath and Port Talbot circuit No 30 for dermatitis and other skin diseases an

WEIR R S M B Glasg sheriff court districts of Dunferm line and Kinross remember what happened.' On being told that he did really but was afraid to think of it he continued. He wept when telling of the woman he was attempting to rescue. He was then reassured, and even persuaded to smile over a cup of tea.'

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[1] Good illustrations of the impetigococcus can be found in Sabouraud's book (1928) and in the British Encyclopædia of Medical Practice, ' 1938 vol VII, p 85 There is a good photograph of the pemphigus coccus in the first paper by Falls, where it shows a strong resemblance to the intracellular impetigococcus

[2] " Methods of Assessing the Physical Fitness of Children " U S Department of Labor, Children's Bureau, Publication No 263

He was admitted to the ward and given nembutal gr. 6, with which he slept well. The next day he still had a severe stammer and said he could not see properly. He had an hysterical ophthalmoplegia, neither accommodating nor moving his eyes but gazing fixedly upwards. He was reassured and told he was simply not bothering to look yet but would soon be well. The symptom was not taken seriously, nor was a transient complaint that his neck would not move (a radiogram revealed no bone injury). He was kept narcotised by nembutal, gr. 3 twice a day and gr. 6 at night for 3 days. He was then allowed up, and after another day was quite well and helped in the ward. His stammer had disappeared but he was a little hypersensitive to noises. He remained in the ward for a week, and is now at work. On one occasion since discharge he complained of insomnia, but this was easily controlled with a mild sedative. He now has no amnesia for the incident, which he is able to discuss without undue horror. He is a lad of previously normal personality, popular and sociable and keen on boxing. There are no neurotic traits in the family or previous history.

TREATMENT OF EMOTIONAL SHOCK AND TRANSIENT HYSTERIA

These patients are acutely exhausted emotionally by their terrifying experience; their great need is for rest. If the memory is too horrible to let the patient rest, he will forget it and develop some hysterical symptom. The first part of the treatment consists in taking a history of the incident from the patient, and if this is taken early his amnesic mechanism will not have had time to develop. Every effort must be made to persuade the patient to fill in the gaps in his story. This history-taking may even further distress the patient, and it has to be done tactfully, with frequent reassurance. If the patient is too dazed to give an account of himself, the history can be taken after he has slept.

The second part of the treatment is sleep. If a patient is brought to hospital for emotional shock his condition is probably more than simple fear which can be treated with reassurance and a dose of bromide. He has probably lost his home, and to discharge him from hospital to a public shelter is cruel and demoralising to others in the shelter. Mild cases should be given a sedative such as chloral hydrate and potassium bromide gr. 30 of each, and allowed to sleep for 3 hours in a quiet room of the outpatient department or first-aid post. If a reasonable home is available they can then be accompanied to it by a relative or friend. More severe cases should be allowed to sleep the night in hospital. A really adequate dose of sedative such as nembutal gr. 6, or sodium amytal 0.5 g. or morphine gr. ¼, and hyoscine gr. 1/100, should be given. If the patient is obviously severely shocked and incapacitated, as in case 3, he should be admitted to hospital for about a week. For the first two or three days the patient should be under narcotics, preferably barbiturates. He should sleep through the night, sleep about an hour during the morning and about 2 hours in the afternoon. About 13 hours sleep out of the 24 is desirable. After this he should get up and encouraged to work in the ward.

The Ministry of Health memorandum[1] says: "When hysterical symptoms predominate an attempt should be made at once to influence or remove them by suggestion, for instance by showing the patient that a powerless limb is not paralysed or anæsthetic, or by making a speechless patient phonate by coughing and then utter a single sound as 'Ah.' Hysterical tremor can be usually arrested by making the patient relax his muscles." This statement is to some extent misleading. It might be interpreted to mean that a terrified, tremulous and tottering patient, who has narrowly escaped death by bombing should be marched up and down to show him that his legs work still, then told to relax, pull himself together and go home. All he really needs is sleep and encouragement. Intensive symptomatic treatment has never been necessary with patients seen at this hospital as long as amnesia was prevented and they were allowed to sleep.

It has been suggested that admission to hospital is the worst thing that could happen to a patient suffering from emotional shock, as the patient comes to regard himself as an invalid and the condition is perpetuated. This has not been our experience. The patients admitted have all improved rapidly in the comparative security of hospital. They want to get well, and there is no such motive for invalidism as there was in shell-shocked soldiers in the last war. As soon as their minds are rested they recover. Some patients ask, during recovery, to be sent to a quiet hospital away from the anti-aircraft barrage. This is impossible, but the noise does not interfere with their recovery. Even a few bombs in the hospital grounds, though scaring some of these patients, did not promote serious relapses. It is even possible that recovery while the patient is still in a noisy neighbourhood serves to desensitise him to noise.

For inpatients the third part of the treatment—occupational therapy and re-education—begins on the second or third day after admission. They are encouraged and even vigorously persuaded to get up and mix with the other patients and help with the work of the ward. On the next day they are given their clothes and sent out to work in the garden. Various other jobs, such as assisting in office work, are found for patients of different tastes. During this period psychotherapy in the form of reassurance and discussion of any persisting difficulties helps the patient to return to a normal existence. Before their discharge it is important to help the patients to obtain practical assistance for their problems. For this purpose a social service worker is most helpful. These problems include evacuation of wife and children, arrangements for the patient's accommodation in congenial surroundings if his house is destroyed, assistance with arrangements for repair and salvage of property. After being emotionally shocked by bombing any patient needs some assistance in dealing with his responsibilities; worry about them can considerably delay recovery.

PSYCHONEUROSES

Definite psychoneuroses induced by air-raids in patients who have previously shown no psychoneurotic traits are comparatively rare, and the only cases seen have been examples of hysteria in some form. A particularly horrible experience is needed to precipitate this reaction in a previously normal person.

CASE 4.—A married insurance clerk, aged 44, was admitted to hospital for a suspected fracture of his clavicle after a bombing. No physical injury was found, but on the fourth day he was found to have an hysterical paralysis of his left arm. He was then seen for psychological investigation.

His complaint was: "I think this arm is crushed. I cannot use my shoulder, my arm burns horribly." He had been in a shelter 5 days before. In his words, "There was a thud, a shower of stuff on my head, I kicked myself free, the shelter had split open. I felt my left shoulder was jammed. I saw my wife's feet sticking out of the muck, I tried to pull her out but my left arm had no strength." His wife was subsequently rescued and was also in hospital. There was no abnormality in his family history; he had 3 normal siblings. There were no neurotic traits in childhood. He did well at school, then joined up for the last war where he saw active service in Mesopotamia; he did not develop shell shock. Since the last war he has worked as an insurance clerk. He married at 26, and was happy with his wife. There were no children.

He was quite calm as he gave this somewhat negative history. He had a flaccid paralysis of the left wrist and forearm, glove type of anæsthesia of the left arm and hysterical ataxia. There was, however, some tenderness of the left radial nerve, probably due to traumatic neuritis, which had formed a basis for the hysterical symptoms. Of the incident itself, although he was not aware of any definite gap in his memory, he said "Everything happened in such a mist of pain and blackness I don't remember it properly." Simple persuasion was not enough to rid him of his symptom, and he was taken to a quiet room and 4 c.cm. of 10% Evipan was injected intravenously. On coming round from the anæsthesia he spoke spontaneously, while his eyes were closed, with emotion which had been lacking in his previous account:

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[1] Memorandum for the Guidance of Medical Officers and other Personnel at First Aid Posts. E.M.S. Memo No. 4. London, 1939, p. 11.

subject, therefore, has 50 × 63·5, or 3175 c.cm., of plasma, containing about 222 g. of proteins. The percentage increase in the plasma proteins after the transfusion of one bottle of fluid is shown above.

Obviously it is the use of serum which calls for most care. Once introduced, plasma protein cannot readily leave the circulation, and by virtue of its osmotic pressure retains the water injected with it; this means extra work for the heart. The lungs act as the immediate safety valve, and if the volume of plasma protein solution in circulation exceeds a certain level fluid rapidly passes into the pulmonary alveoli, causing œdema of the lungs. We cannot say what percentage increase of protein in the plasma will cause a dangerous degree of pulmonary œdema, but probably even one bottle of serum may be deleterious. There can be little doubt that in severe secondary shock one bottle in excess of the amount required to replace lost plasma may endanger life. In patients suffering from "primary" shock only, where there is no evidence of loss of cells or plasma from the circulation either by internal hæmorrhage or œdema, it cannot be too strongly emphasised that there is no rational basis for treatment by transfusion.

CONTROL OF DOSAGE

Ideally, dosage would be regulated by repeated determinations of plasma-volume or blood-volume, but, unfortunately really simple methods for estimating these do not exist. The urgent need for transfusion often precludes the use even of such methods as are available. Of these, one of the best is that of Hill[1] for determining the blood-volume during transfusions of whole blood; as Hill suggests, the same principle might be used in assessing the plasma-volume during serum transfusions. In the absence of such precise information, other and less reliable indications have to be considered. No single test is a sure guide: pulse-rate, hæmoglobin percentage, red-cell count and hæmatocrit determinations are of value, but their interpretation is at times very difficult. A mental estimate of the amount of plasma and red cells which may have left the circulation is useful, but may be difficult to make. Even the immediate response of the blood-pressure to transfusion affords no certain indication either that enough fluid has been or that more should be administered. Early in "primary" shock the blood-pressure may be subnormal—a factor making differentiation from circulatory shock difficult. If no time is allowed for observation of such a patient, and a transfusion is given at once, the subsequent rise in blood-pressure may wrongly be ascribed to satisfactory treatment of circulatory shock. Conversely, even if the blood-pressure fails to respond favourably, transfusion should be discontinued once the volume permissible on the grounds discussed here has been administered.

While it is difficult, then, to assess dosage on the basis of any or all of these various signs, we shall probably avoid transfusing an excessive amount if we administer, of any medium, only sufficient to make good the maximum probable protein loss from the circulation.

SUMMARY

In cases of hæmorrhage or circulatory shock, the lasting restoration of the blood-volume to its normal value by transfusion depends on the replacement of dissolved protein lost from the circulation as a result of injury.

Since equal volumes of serum, citrated plasma, citrated whole blood and defibrinated whole blood contain different amounts of dissolved protein, the volume to be transfused in any given case will depend on the medium chosen.

Bearing in mind the blood-volume of the patient in health, and the maximum probable loss of fluid from the circulation at the time of transfusion, it is possible to state how much of any one of these media can be administered with safety. These maximum volumes are: serum 3·4, citrated plasma 5·1, citrated whole blood 8 and defibrinated whole blood 6·6 bottles.

This estimate may serve as a check against the transfusion of excessive amounts when the interpretation of the clinical indications for dosage is difficult and the case-history unknown.

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[1] Hill, D. K. *Lancet*, 1941, **1**, 177.

CIVILIAN PSYCHIATRIC AIR-RAID CASUALTIES

By Felix Brown, D.M. Oxfd, M.R.C.P.
REGISTRAR IN PSYCHOLOGICAL MEDICINE AT GUY'S HOSPITAL, PSYCHIATRIST UNDER E.M.S.

The psychological reaction of civilians to air-raids has been observed in the south-eastern sector, and it is now possible to classify the types of casualties occurring and make some suggestions for their treatment. The swarms of hysterics which were by some expected to follow bombing have not appeared, but nevertheless there are certain psychiatric disorders attributable to air raids.

ACUTE EMOTIONAL SHOCK

The symptoms in mild cases of shock are tremor, sometimes violent, dilated pupils, and tachycardia, with an emotional state of fear, perhaps mixed with anxiety about relatives and property. There is usually extreme sensitivity to noise and considerable restlessness. This reaction may occur in anyone who has been in a bombed building, especially if he is anxious about an injured wife or husband.

Case 1.—A man, aged 35, of previously normal personality was bombed while in a public house. His wife had a flesh wound in the back. He was extremely tremulous and anxious, chiefly about his wife. Reassurance, a night in hospital and a strong sedative (Nembutal gr. 6) enabled him to recover and return to his normal life next day.

In this fear reaction there is no hysterical amnesia for the events.

ACUTE TRANSIENT HYSTERICAL REACTIONS

Some cases seen shortly after a bombardment are in a limp semistuporose state, usually with a tremor. These patients are acutely scared and seem to be groping for hysterical symptoms to give them peace of mind and forgetfulness of the incident.

Case 2.—A married woman, aged 40, was seen half an hour after a raid. She complained of trembling of her hands, which she said were going stiff. She had dilated pupils and looked terrified. She held her fingers stiffly extended. She said "I was writing. I heard the bomb coming down, the crash came. Then all the windows came in on me. I ran for the door and the blast came in from outside. I went into my neighbour's flat, but she seemed to have a fit. I seemed to go all dizzy and collapsed. I thought I had a stroke." Her mother had died of a stroke; two of her sisters had had St. Vitus's dance. For the past 10 years she had complained of headaches and depression; she did not get on well with her husband, and resented sexual intercourse. Her symptoms had been better recently until this incident, as she had been able to mix with others in the public shelters.

No attempt was made to get rid of her hysterical symptoms at once, but she was reassured and given gr. 30 each of chloral hydrate and potassium bromide. It was not possible to admit her to hospital, but she was allowed to sleep for 3 hours in the outpatient department. On waking up and having a cup of tea she had lost her symptoms and was able to discuss her experience without terror; she had recovered enough to go to a friend's house. This patient had a previous history of psychoneurotic traits, and developed her shock in circumstances by no means exceptionally disturbing. The hysterical symptoms, however, were only of short duration.

Case 3.—A hospital porter, aged 19, was seen about five minutes after being bombed. He was pale, looked shocked, his pupils were dilated and his pulse was of good volume, rate 70 per min. There was a slight superficial scratch on his forearm but no other physical abnormality. At first he was mute, gazing with a vacant stare at the ceiling. With some persuasion he was able to give his name and address slowly and with a severe stammer. After about ten minutes he was persuaded to give his history, still with a bad stammer. He had been within a few yards of one of a salvo of bombs which had hit a hospital building. He went among the wreckage, and was trying to rescue a woman trapped under a sink when another bomb exploded and blew him out of the window. He picked himself up, unhurt but dazed. After sitting down in an office he collapsed and was unconscious for a few minutes. When this history was being obtained he at first said "I don't symptoms, probably only formed after a period of meditation 3 Treatment consists in analysing the problems and destroying any emotional amnesia the patient may have developed, and in providing routine work or occupational therapy, if the patient is in hospital The prognosis is excellent

EXACERBATIONS OF EXISTING PSYCHONEUROSES

Exacerbations occur mainly in hysterics No extreme danger is needed to provoke this reaction. Hysterical fits may recur in old hysterics A situation provoking recurrence of an old hysteria is that of a timid woman of nervous personality, left alone in a house or shelter at night, who develops a hysterical symptom necessitating removal to hospital with resultant relief of the situation Invariably there are other factors than the raids operating, on analysing them one finds situations such as unhappy marriage, unsatisfactory jobs and sexual difficulties Such cases usually do well in hospital, and their admission is advisable because they are likely to be a nuisance in a public shelter

REACTION OF ESTABLISHED PSYCHONEUROTICS

The reaction of some of the well-established psychoneuroses to bombing is remarkable A long-established, complex-determined anxiety or obsessional state gives a patient a greater feeling of security from air-raids than 60 ft of concrete A psychoneurotic man said "Oh, I'm not worried about the bombs—it's this queer tickly feeling in the back of my head" A woman of 31, with obsessional fears of murder and suicide and knives, who was sexually frigid, said "I'm afraid I can't get very concerned about bombs; I wish I could, it would be more normal" She was leading an ordinary life in a heavily bombed area Her condition was related to guilt feelings about an episode of infidelity to her husband, but it represented a complicated psychoneurosis with ramifications in her earliest childhood Psychotherapy proceeded uninterruptedly even when, on one occasion, bombs were crashing round the outpatient department, the patient remaining completely indifferent External happenings such as bombs were trivial compared with the internal conflicts which were always with her

Case 8—An unmarried dental mechanic, aged 28, had been attending Guy's psychiatric outpatients since 1937 for an obstinate psychoneurotic depression, which was related to his failure to emancipate himself from his mother There were in addition numerous sex guilt factors, some of which dated back to his earliest childhood He had an extremely shy and timid personality Attempts were made to help him to free himself and take up outside interests, but without success At the beginning of the war he joined a first aid post The year of inactivity he found tedious, and was worried by one of his colleagues who used to discuss Freudian psycho analysis When the raids developed, however, he lost all his psychoneurotic symptoms and behaved in a thoroughly heroic manner He rescued people from bombed buildings while bombs were falling, and had some very narrow escapes His own house was bombed, his mother being taken to hospital slightly wounded, but he developed no symptoms and carried on with his work

This man would probably have broken down early in the Army, and he had been given a certificate to that effect It seems that this type of personality is able to adjust much better in civilian A R P work, where duty is of obvious and imperative importance, and connected with saving life, rather than in the combatant services

The extraordinary toughness of some well-established psychoneurotics to aerial bombardment may be due to the fact that they are to some extent reassured by seeing other people being as worried as they have felt for years Another reason may be that the whole of their emotional tone and affect is concerned with their own problems, usually related to sexual difficulties, and there is no affect left for simple bodily fear In some cases the urgency of the moment does serve to inhibit the patient's long standing emotional conflicts, with resultant clinical improvement In the Russian revolution it was said that the obsessional psychoneurosis became extinct owing to the urgency of the times In the cases seen among civilians here the obsessional state seems to have remained unaffected by the raids, and only served to give the patient immunity from fear of them The patients who have been almost cured of their complaints by the raids have been suffering from anxiety state or psychoneurotic depressions, and have never been able to develop sufficient outside interests

PSYCHOSES DEVELOPING IN APPARENTLY NORMAL PATIENTS

When a psychosis develops in an apparently normal person there is usually some previous abnormality or predisposing conflict which has left the patient emotionally insecure

Case 9—Acute paranoid panic psychosis A married woman, aged 53, was admitted to the observation ward after having made a violent attack on a neighbour She was brought in by four A R P men, one of whom she had severely mauled She had been well until 3 days before admission, when some bombs dropped in the neighbourhood She rushed under the stairs with a gas mask and said "Here the Germans come" She did not, however, seem exceptionally frightened The next night she saw a light, which she reported, and then began saying that the neighbours were in league with the Gestapo She met one of the neighbours and chased her savagely down the street with wild yells She was then brought to hospital

Her family history was normal She had had a rigid Victorian upbringing but a fairly happy childhood She did well at school and worked as a saleswoman in London until she married at 37 The marriage was not consummated, as she had a distaste for sexual intercourse In her words. "He was too fond of me to hurt me" The marriage was happy, however, and she and her husband were very dependent on one another For a year before admission, she had had dermatitis artefacta She had been reasonably sociable, somewhat imaginative, and keen on arts and crafts

On admission she was fighting wildly and shouted "Oh help, it's the Gestapo Go away, I'm a gas-mask" Here she inhaled through her blanket, and said "What's that on the bed? It's poison gas" She was quite disoriented and confused She was given sodium amytal, 0 5 g, intramuscularly and slept deeply Next morning she made a homicidal attempt on the ward sister, whom she called a Gestapo agent She was kept narcotised with sodium amytal, 0 5 g, every six hours for 3 days Every effort was made to reassure her about her surroundings, and her husband was allowed to sit with her all day After 10 days she regained her normal personality She remembered her experience and said it was due to fright She was discharged and has remained well In this case the psychosis developed without a particularly terrifying experience Her previous insecurity is shown by her dermatitis artefacta (which recovered completely during the psychosis) and by her sexual frigidity

Case 10—A married woman of half Irish parentage, aged 52, was admitted to hospital for hysterical aphonia following her collapse in the street after an air raid Five weeks before admission she was alone in the house and her husband was late home She heard that his factory had been bombed, she was very tense on his return Next morning she had to quit her house owing to a time bomb She was well for a day, living with her daughter, but on seeing a burning gas main she collapsed and was brought into hospital

There was no abnormality in the family history She had always been a seclusive, home loving woman, with no outside interests, a devout Roman Catholic There had been no previous breakdown She had had an appendectomy at 20, prolapse operations at 35, and operation for fistula Her married life was happy, but her husband had recently been on night work, and she had been left alone at nights She had a grown-up son and daughter Since her son's marriage two years ago she had been jumpy and nervous, and had been much upset when he subsequently developed tuberculosis

I was consulted three weeks after her admission to a reception hospital, as she had not improved She then presented the typical picture of hysterical aphonia, except that she was still tense and restless, the symptom had not given peace of mind She gave a reasonable account of herself and was obviously much worried about her son and the disturbance of her routine by the time bomb The symptom of aphonia was very slight and easily disappeared, but since her home was not ready she was transferred to a base hospital Here she developed paranoid symptoms There was a period in which it did not seem clear whether paranoid or hysterical features would predominate She said "You

"I'll get you out, Dolly—I can't use my left arm Say something I'll pull you out Someone will come soon Let me catch hold of your feet Dolly, I want you so Oh, if I had a spade I can't shift this concrete Don't show a light or they'll see you I don't want to go in no car I must get the others out or I'll die My back hurts Oh my shoulder Oh my knee ! Come on, old girl " At this point he waved his right arm about and continued to do so for about ten minutes "If my left arm was right I could do it Damn old Hitler, if only I could get at the swine Why can't I fit wings on my car ? I'll teach them to bomb the girls and the kids House, car, all the damn lot's gone Never mind we can sleep in the tent Thank God, I've got my Dolly Poor little Betty, she's covered with blood I don't want no doctor Never mind about me, I can take it Blimey, if they gave me a plane Oh, Dolly, I thought you was a goner Damn the house, let it blow to hell as long as you're safe I'll be late for the office, but they'll have to wait Never mind, old girl, we'll take you up to the wilds of Scotland and we'll fish for some trout, never mind the trespassers will be prosecuted "

Quite suddenly his arm stopped waving and he continued on a completely different topic, alluding to his experience during the last war, when he was the sole survivor of an expedition in the desert in Mesopotamia These were experiences of which he had previously told nothing The following is a kind of jumbled running commentary of the whole incident, which had lasted almost a year "I'll join up with the natives and go up country, shoving the boat down We'll shove over round Alexandria if we have to Six of us of the whole squadron I'll shoot the first blasted Arab that pinches my grub Think they can scare me with their tom-toms ? What does the sheik give me his damn daughter for ? Think I want to be a princess's gigolo ? Where the hell can I get a boat ? This sand is never ending I'm damn thirsty. Anyway, old boy, pull your belt in, stick it, we'll find an oasis soon What's that ? Can I drive a motor-boat ? I can drive anything When I say full speed ahead we'll run through the swine I'm going to beat it to England as soon as I can " He continued, describing how he caught a cargo boat and finally reached England "What's this ? Newport, home at last Don't tell 'em anything, tell 'em you've been abroad and let them find out the rest A pass to London, please I'm sorry, Sir, I've lost all etiquette I've come off the desert No one knows I made it I've come off alone What have I got a pith helmet for ? Hello, mother, I've just come back to England I've had a jolly fine time, no danger I've been travelling about a lot What did I do ? Oh, odds and ends Oh well, I'm all right now " He then returned to his original topic of the rescue of his wife "Never mind We've lost everything, we'll start again old girl I'll be all right " He was then vigorously reassured that he would be well, and he woke up and was delighted to find that his arm was normal He made a good recovery, and after a brief holiday in the country returned to work

This case is particularly interesting, first because the patient gave such a vivid account of the psychological reaction to being bombed and secondly because it illustrates the reactivation of old experiences by the emotional disturbance of the bombing

CASE 5 —A girl, aged 17, a machinist, had been living alone in the East End with her sister, aged 14 She had shown no definite neurotic traits, though she came of low-grade parents who had deserted her and she had always been somewhat timid and excitable During a severe day raid, she was in a shop which she was told to leave when the raid started When she went out into the street she met a friend, an epileptic, who took her into a public house This then received a direct hit, and all except herself and the epileptic were killed She was calm until the epileptic had a fit, whereupon she began shrieking and continued for almost a quarter of an hour

She was seen about a week after the incident She complained of headache and insomnia On questioning, she said she was afraid of going mad or losing control of herself as on the occasion of the bombing She thought her headache implied impending insanity She was partly reassured about this, but her home surroundings were most unsatisfactory She was taken into the base hospital for a month After a week some symptoms persisted and she was given evipan narcosis, under which she described vividly the scene of horror which precipitated her condition "There is a man's head under the piano—I can't see where the body is It's horrible I'm going mad " She cried and seemed terrified After suggestions of increased control and confidence, she became quiet Following the narcosis she improved steadily and worked well in the needle room of the hospital A job was found for her in the country on her discharge a month after admission The hospital was bombed during her treatment She shrieked a little, but this did not in any way delay her recovery

CASE 6 —The patient was a married factory inspector, aged 40, seen 2 months after being bombed and buried He complained of tremor, nightly bedwetting, and attacks of intense cramp like pain which woke him as soon as he went to sleep Two months previously he had been on the way to visit his aunt to arrange for his uncle's funeral and a bomb dropped near him On reaching his aunt's he found that she and her house had disappeared in an explosion He then went with a friend to have a drink at a club This received a direct hit, and he was buried for 5 hours He was dug out dazed but unhurt In his words "I could not remember much, I did not seem to know where I lived " He was driven to the end of his street but on reaching his house he found the place disorganised by broken windows, and there was a bus driver's arm in the top room, as a bomb had dropped outside His one thought was to find his landlady to arrange for the repair of the house, but he had forgotten her name and address He wandered in the streets all night looking for her Finally he remembered her name and made the necessary arrangements On attempting to carry on with his normal life he was troubled by the bedwetting and pain in his legs He also suffered from fear of insanity and inability to concentrate which prevented him from working "I'm scared of them seeing me dithery at work "

His family history was normal His early history was normal, he had been a particularly active and robust man He had had a successful army career, which was cut short some years ago by a scandal connected with dishonoured cheques In spite of some alcoholism and extravagance he had been able to obtain good jobs after this There was a lawsuit pending about some possible further frauds by him He was in fact a somewhat unstable and erratic man, but had not shown any psychoneurotic traits before his series of bombing experiences There had been no previous enuresis

He was asked to relax and cast his mind back to the actual feeling of being buried He became anxious and frightened and said "If only my watch had been luminous it would have been better I was dying to see something I was wanting to pass water all the time but I did not want to wet myself And the cramp was horrible, I could not move my legs, they were pinned down !" He then told how he did finally micturate, much against his will, and this gave him as much displeasure as anything In addition he told of recent dreams of being in train smashes, in which his legs were pinned down, and that he wakes with the pain in his legs The obvious interpretation that at night he re-enacts the unpleasant experience of being bombed, including wetting himself and the cramp in his legs, was made to him He was at once much relieved, and his symptoms disappeared completely after one interview He was seen two weeks later, when he was back at work and quite well

CASE 7 —A married liftman, aged 56, had a severe hysterical tremor after the bombing of a block of flats "I was woken up by the dog, the third floor was going I got hold of the water pipe I hung on to that with the dog on my chest I called for help and can't remember any more " He was rescued hanging with his dog to a water pipe 40 ft above the wreckage, under which the body of his 14 year old son was buried He had stayed by the wreckage for 5 days until the body was recovered When seen a week after the incident he had slight headache and tremor He refused to come into hospital, and it was not considered advisable to attempt to release his amnesia for the events, the memory of which might prove more than he could tolerate as he was a man of fairly low intelligence When asked how he felt, he said "pretty fair " in spite of his experience He had completely forgotten the horrors for which he had been able to substitute a symptom, and the symptom was considered best left untreated, since it did not inconvenience him greatly

An essential feature of the psychoneuroses developing after bombing in previously non-psychoneurotic people seemed to be 1 The extreme severity of the actual experience, or even the culmination of horrors needed to provoke the reaction 2 The cases were usually seen after several weeks had elapsed since the incident, and their immediate reaction was probably that of acute emotional shock previously described , definite psychoneurotic insomnia due to raids rather than any bombing experience A period of mental hospital treatment is usually necessary

ESTABLISHED PSYCHOTIC PATIENTS

Patients suffering from an already established psychosis are usually abnormally unmoved by air-raids This is what one would expect of people whose whole emotional attention is directed to their internal conflicts One severe paranoid schizophrenic patient, with delusions that people were spreading rumours that he was carrying on homosexual activities was quite unaffected by raids, being able to improve and return to work as an insurance clerk in London In some cases the war enters the delusional content

One woman of 45 who had been psychotic since the start of e war, and particularly paranoid against her brother-in-law, id that every night her relatives came over in aeroplanes d tried to bomb her, but so far they had failed to harm her nother woman of 50 with long-standing paranoid delusions id that the neighbours were accusing her of bombing them It's absurd of them to say such wicked things, how could I mb them ? " she added The psychosis, however, remained mpletely unaltered, and she is able to do a full day's work in munitions factory

SENILE DEMENTIA PRECIPITATED BY AIR-RAIDS

A large number of men and women over 70 are evacuted to the base hospitals from bombed areas These are nt into hospital because their homes are bombed or ecause their relatives are no longer able to take care of hem Such cases are often admitted as " war neurosis " nd classified as " serious casualty " They had usually een reasonably well-adjusted at home, leading a quiet fe, gossiping with neighbours or sitting by the fireside ut in some cases their memories had been failing for ears Often they had never been in hospital before he adjustability of these elderly people is poor, and on ntry to hospital many of them become disoriented, hey cannot understand what is happening around them, nd may develop paranoid delusions that the nurses re scheming against them In addition to disorientation there may also be severe depression Senile ementia in fact tends to develop, and may lead to death airly rapidly

Case 13 —A retired baker, aged 70, previously fit, was dmitted because the house where he had been living with his aughter was damaged His daughter left town and was nable to take him with her Shortly after admission he ecame confused and restless, did not know where he was, and nuttered " They are poisoning me " His condition steadily deteriorated and he died within a fortnight of bronchopneumonia

These elderly people are quite unsuited for the base hospital, where they constitute a serious problem The best treatment is undoubtedly to discharge them to some familiar environment and company Often, however, this is not possible They are more suited for some form of ambulant hostel life than for life in hospital

DISCUSSION

The types of psychological air-raid casualties among civilians resemble those described among soldiers, but there are certain differences A civilian population is completely unselected, includes the old and the young, both sexes, and the already emotionally unstable as well as the mentally sound Thus there are not only the immediate reactions of healthy people to a severe shock but also the effects of prolonged stress on the weaker members of the community For this reason psychoses are probably relatively commoner air-raid sequels among civilians than among soldiers Senile dementia constitutes a special problem No acute emotional-shock reactions among children have been seen Women seem to be by no means a weakening element in the general population, in fact the male cases of emotional shock and psychoneurosis seen resulting from air-raids outnumber the females in the ratio 30 to 18 A civilian is not a member of any organised conscript body from which he can escape by invalidism, there is for him no immediate prospect of pension, there is no medical board to be considered In fact there is no motive for continuation of symptoms any longer than he can help This probably accounts for the excellent prognosis of the civilian air-raid psychoneuroses and emotional-shock states if adequately and early treated

The incidence of genuine psychiatric air-raid casualties has been much lower than might have been expected, the average previously healthy civilian has proved remarkably adjustable.

SUMMARY

Civilian psychiatric casualties are classified into the following groups

1 Mild and severe emotional shock treated by taking a detailed history, putting the patient at rest under sedatives for hours or days according to severity, and arranging for rehabilitation, occupational therapy or discharge to congenial surroundings A severe bombing experience is needed to produce this reaction in normal people

2 Psychoneurosis, usually hysteria associated with amnesia for the provoking incident These have been treated by psychotherapy or evipan narcosis designed to eliminate the hysterical amnesia, and occupational therapy combined with continuation of psychotherapy to deal with other problems reactivated by the bombing A very severe bombing experience is needed to provoke a hysterical reaction in a normal person

3 Psychoses, usually panic and depressive states Personal insecurity is present in most cases which develop a psychosis after bombing These have been treated in the same ways as the corresponding psychoses of peacetime Many cases of senile dementia are precipitated by hospitalisation after air-raids Established psychoneuroses of the anxiety-state and obsessional types are usually unaffected by raids Most patients with established psychoses are also unaffected by air-raids

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ABSORPTION AND EXCRETION OF SULPHONAMIDES APPLIED LOCALLY

OBSERVATIONS IN RABBITS

BY
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MUCH work has now been published on the promising results of the local application of sulphonamide compounds to wounds, but comparatively little has been recorded of the rate of absorption and excretion, and of the proportion of the drug which undergoes conjugation, after local application

Jensen, Johnsrud and Nelson (1939) recorded two blood-concentration curves in man after the topical application of 10 g and 6 g of sulphanilamide respectively to compound fractures The maximum blood concentrations reached were 14 mg per 100 ml in 18 hours after the 10 g dose, and 6 mg per 100 ml in 12 hours after the 6 g dose

Legroux (1940) found a maximal blood concentration of 4–5 mg per 100 ml, 24 hours after the local application of sulphanilamide in animal experiments All traces had disappeared from the blood in four days

Herell and Brown (1940) found that appreciable concentrations of sulphanilamide in the blood were obtained from 1 6 g only when applied to the large pleural or peritoneal absorptive surfaces When applied in other localities the quantity of drug in the blood was too small to detect

McIntosh and Selbie (1941) recorded values of over 40 mg per 100 ml after intramuscular injection of 20 mg of sulphanilamide in mice The dose given was very large—if the mouse is assumed to have weighed 20 g it corresponds to a dose of 70 g for a 70 kg man With sulphapyridine, the blood-concentration after intramuscular injection was much lower, and never exceeded 5 mg per 100 ml

Hawking and Piercy (1941), using single applications of 5 g of sulphanilamide or sulphathiazole, found a maximum blood concentration which rarely exceeded 1 5 mg per 100 ml in 24 hours After 48 hours the concentration was with one exception negligible

The following observations were undertaken to obtain further information on the rates of absorption, conjugation and excretion of sulphanilamide sulphapyridine and sulphathiazole after their application to uninfected wounds in rabbits know what they are trying to do to me I'll go to church and get sanctuary there You know I am not faking It was terrible, those bombs They turned us out without time to dress I can't speak properly They all get in bunches and turn their backs on me I can hardly see They've been doing their silly film acting on me " For the next few days she alternated between hysterical aphonia for a day, without delusions, and a gradually increasing paranoid excitement in which she said something immoral was going on upstairs and that her eyes were plastered with sticky paper Her affect in the paranoid state was one of intense fear Finally the paranoid panic predominated and she became elaborately hallucinated She said " I'm scared There are voices all round the room shouting my name People try to scare me by talking of gas bombs I have a bad eye, I don't know who did that They keep saying knives and cats are inside me, I don't see how they would crawl in They tap out messages, they are taking down messages with dictaphones " She was finally certified and sent to a mental hospital Her prognosis, in view of the acuteness of the illness, is likely to be moderately good

This patient, although her first psychosis seems to have been precipitated by the bombing experiences, had undoubtedly been in a tense, insecure state for at least two years before this psychosis, and it is possible that the psychosis would have developed without air-raids Moreover, the bombing experience was not by any means a severe one Particularly interesting was the fact that recovery from hysteria released a severe psychosis Sedatives and reassurance did nothing to influence this deterioration

DEPRESSIVE PSYCHOSIS

The depressive psychosis can be precipitated by bombing, and is a commoner reaction than the paranoid panic state Some previous features of insecurity have been present in all the cases seen, although no previous psychosis has occurred

CASE 11 —An unmarried surveyor, aged 52, was transferred from a reception hospital to the base hospital 36 hours after being bombed in a shelter He complained of feeling depressed and frightened, and blamed himself for the death of the people in the shelter He had been on duty as shelter marshal when a heavy bomb hit the shelter and everyone else in his half of the shelter was killed He only received a bruise on the back In his words " I was changing the lights over, the bomb exploded, the shelter was smashed My job was to get the services as soon as possible I tried to get out the kids A brick had hit me in the back " He apparently did fetch help, and then began crying and shaking He was taken to hospital, where his ward was hit by an incendiary bomb , he tried to get out and was soundly scolded He did not sleep that night and in the morning was told he was to be discharged, but as he told the ward sister he intended to commit suicide, he was transferred to the base hospital

There was no family history of nervous illness His father had been bad tempered and an alcoholic His mother, to whom he had been deeply attached, died of diabetes in 1922 There were no siblings As a child he used to sleep with his mother until he was 12 He suffered from night terrors of a man coming to suffocate him He did excellently at school, and worked himself up to some distinction in his profession In the last war he was hit by a shell fragment and was jumpy and nervy for a year afterwards, but was not discharged from the Army He was subsequently in a torpedoed ship and floated in the sea for 6 hours, but without any lasting nervous after effects The sexual history was negative He said his mother was the only woman he had ever loved, he was much depressed by her death, constantly thought of her and kept relics of her by his bedside He had been engaged once, but as the woman wanted to supplant his mother he gave her up He had had no promiscuous intercourse, in fact said that his tight foreskin and small penis would render this impossible He was popular at work, religious, and made every effort to lead an extremely virtuous life He had lived alone in his mother's house since her death

He was a depressed man of pyknic habitus , he wept frequently in telling his story He said " There were 25 people in the shelter , 10 would not have been there if it had not been for me I used to give them cakes and medicines I looked after them They would have been alive today if it had not been for me I murdered them I'm supposed to save life, not take it " He was given heavy doses of barbiturates for 3 days, during which he slept most of the time He gradually lost his delusion of guilt, but for some weeks remained sensitive and upset by noises, and occasionally would have exacerbations of self reproach, calling himself a coward He had a relapse of depression for 2 days after the hospital was bombed, but while the actual rescue work was going on he was quite symptomless and offered to help The reaction only occurred an hour afterwards He remained somewhat tense, and a month after admission he was given evipan hypnosis Under this he spoke for some time, calling on his mother He said " I have only lived for you " He told what a wicked boy he had been, how his mother had once found him masturbating and scolded him about it " I've always tried to atone for this, I've tried to be chaste as she said, but I sometimes did it after what she told me " He was reassured emphatically, since he had obviously felt very guilty about this incident He also spoke of the actual bomb experience, but there was no essential addition to his previous account He was told under hypnosis he would feel much better, and on waking up he was extremely euphoric for about a day, but considerable improvement was maintained With psychotherapy he made a gradual recovery and was well enough to be discharged to work 9 weeks after admission, though some depressive features persisted

This patient illustrates how a bomb explosion can release underlying conflicts which normally would probably never have led to a psychosis When these conflicts, relating to very early guilt feelings, have once been disturbed by the intense emotion of fear they have to be solved and treated by fairly intricate psychiatric methods This patient was not acutely psychotic, but his depression, delusion of guilt and suicidal urges rendered the diagnosis of mild depressive psychosis certain

Several more severe depressions have been seen, especially in elderly men No case of mania has been seen, in a previously normal person, directly resulting from an air-raid

Although an absolutely normal person does not develop a psychosis in the stress of bombing, some of the cases we have seen probably would not have developed a psychosis if they had not been bombed The treatment of these psychoses does not differ essentially from that suitable for the corresponding psychoses of peace-time It is, however, worth while to give them a few days of narcosis on first entering hospital

RECURRENCE OF PSYCHOSES

Air-raids can be considered to be one of the factors precipitating the illness in most of the manic and depressive psychoses occurring in bombed areas Underlying personal and constitutional insecurity is considerable in these patients, and many of them would have had a recurrence of their psychoses without air-raids Some, however, seemed to have been reasonably adjusted and recovered until their routine was disturbed by raids No definite narrow escape from death is needed to precipitate another psychotic incident

CASE 12 —A woman, aged 44, was admitted in a manic excitement She had been living quietly with her sister, but 6 weeks before admission she had become excited about air raids, and more and more restless and talkative, though she said she was not scared Gradually her conversation became continuous and incoherent and she could not be managed at home

Her parents had not suffered from mental illness but one sister of 10 siblings had had an attack of mania She had been a healthy child, became a teacher and married at 23 Her husband died after three years of marriage She remarried at 28, but this marriage proved unhappy and at 31 she separated from her second husband After this she developed an attack of mania, for which she was in hospital for 6 months She made a good recovery and lived normally a fairly sheltered life until the present breakdown On admission she was overactive, occasionally violent to the nurses, and erotic to any man She was cheerful and voluble, shouting things like " Oh, I say Oh, right oh, come a bit nearer and I'll give you a kiss Oh, I can't trust you What else do you want me to say ? I'd like to have that watch " She was certified and referred to a mental hospital, where she will probably make a good recovery

This type of case must be common in every observation ward in London The precipitating factor in these unstable personalities is the general unrest and the

THORACOPLASTY FOR PULMONARY TUBERCULOSIS

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The material for this review is taken from the records of 69 male patients who had thoracoplasty at Colindale Hospital between 1933 and the end of March 1939 The hospital does not receive many cases with early or limited tuberculous disease and the results show what can be done in an unfavourable field For example, in 1938–39, of 800 patients, 33 were offered thoracoplasty and only 13 accepted

In 2 cases of our series of 69 the operation was not completed The remaining 67 fall into five groups according to the grounds for the operation —

		Cases and per cent
1	For parenchymatous disease alone	54 (80 5)
2	For draining empyema	8 (12)
3	For tuberculous empyema	1 (1 5)
4	After removal of wax	2 (3)
5	After extrapleural pneumothorax	2 (3)

The first group only will be reviewed in detail here For comparison, it is worth surveying some published results from other centres

Freedlander and Wolpaw (1937) reviewed 85 cases which correspond to the first group, and compared their history with that of 58 patients who had refused thoracoplasty, after from two to four years 57% of the surgically treated group had become closed cases (closed cavity and T.B negative sputum), 13% were unchanged or worse, 9% improved, 14% dead and the remainder untraced, in the controls the corresponding figures were 10% "closed," 49% worse or unchanged, 7% improved, 26% dead and the rest untraced

Peters and Cornish (1938) found a disparity in results between those cases which had a complete and those which had a partial thoracoplasty Of 40 who had the complete operation, 21% were quiescent, 25% still active, 54% dead, while of 38 who had the partial operation, 50% were quiescent, 16% active and 34% dead The fatalities seem more than usually high

Dolley, Jones and Paxton (1939) collated results from fourteen sources (1636 patients), including their own centre, and found that after an average period of at least two years 39 6% were able to work, 26% were improved, 15 6% unimproved and 18 8% dead Carlson and others (1939) reviewed 50 cases 1½–2 years after operation, 50% had closed cavities and negative sputum, and 24% were dead Sommer and Ehler (1940) had rather better results in their 177 patients, of whom 79% had closed cavities and negative sputum Only 12% were dead after a follow up period averaging thirty months O'Brien and others (1940) report 511 patients, including 97 with contralateral pneumothorax, 17 with tuberculous empyema, and 9 diabetics Cavity closure was effected in 87%, sputum became negative in 81 6% Now 65 5% are cured, arrested or quiescent and 19% dead, the rest being unstable or untraced

PROCEDURE

The earlier, and many of the later, cases of the present series were anæsthetised with gas-oxygen-ether Cyclopropane, usually with a preliminary injection of Evipan, has been largely used since 1936, it is ideal during the operation but there is an impression that it has led to increased post-operative collapse In the last two years local anæsthesia has taken pride of place It might have been expected that the cases earlier in the series would have been submitted to fewer stages, in fact, up to December, 1936, an average of 2 stages was done in each, and there was only a slight increase—to an average of 2 4 stages—after that date Almost invariably the upper stage was performed first Disarticulation of the posterior ends of the ribs has been the rule where possible Since February, 1936, Holst and Semb's method of mobilising the apex of the lung by doing an extrafascial pneumolysis has been practised in 23 (42 6%) of this group After his last stage the patient is kept in bed for at least three months, and it is another thirteen weeks on the average, before he can be moved to a convalescent home or sanatorium in the country Few patients resume home life in under a year from the date of their operation While bed treatment continues weights (gradually increased from 3 to 25 lb) are used to increase the falling-in of the chest-wall, and the patient is fitted with a brace when he gets up Massage to the limbs is started early

Selection of cases is of prime importance from the point of view of the chest physician The decision to operate is seldom easily made and nearly all patients have by then spent months in the hospital At Colindale the pros and cons of treatment are thrashed out at a periodical medical clinic Almost all the patients were subjected to other forms of active treatment before undergoing thoracoplasty An artificial pneumothorax had been carried out or attempted on the thoracoplasty side in 48 cases and on the opposite side in 4 cases It was maintained on the same side in 2 and on the opposite side in 2, 9 patients had had phrenic crush and 2 avulsion on the opposite side

GENERAL RESULTS

The follow-up was done at least a year after the last stage in each case, and conclusions were based on interviews with patients and information received from tuberculosis officers Table I gives the findings in the cases where thoracoplasty was done for parenchymatous disease alone "Quiescent" as used in these tables includes some cases which are arrested or cured all patients so classed were sputum-negative and fit at least a year after operation

TABLE I—FINDINGS OF FOLLOW UP INQUIRY MADE AT LEAST A YEAR AFTER FINAL STAGE IN PATIENTS SUBMITTED TO THORACOPLASTY FOR PARENCHYMATOUS DISEASE ALONE

—	All cases	Operated on at least 3 years ago
No of cases	54	32
Dead	10 (18%)*	8 (25%)
Going downhill	2 (4%)	1 (3%)
Active disease	7 (13%)	2 (6%)
Quiescent	35 (65%)	21 (66%)

* Of these, 6 died immediately or soon after operation.

Of the 44 patients alive at least a year after operation 28 (64%) are known to be working, this figure includes 25 (71%) of the quiescent cases and 2 with active disease Some of those seen recently are in the following occupations coalporter, packer, messenger, labourer, salesman, clerk, draughtsman insurance agent and Salvation Army officer

Age —We have been chary of recommending thoracoplasty after the age of 40 The age-groups of the 54 cases were —

	Cases and per cent
17–25	24 (44 5)
26–35	24 (44 5)
36–45	5 (9)
46–55	0
56–65	1 (2)

The last case was aged 57, he was not upset by a two stage operation which seemed to be completely successful, but he died a year later from further spread of disease A boy aged 17 now shows advanced scoliosis but no conclusion can be drawn from this

Chronicity and type of disease —A number of cases had had tuberculosis for a long time but if (to avoid overloading) the longest history is restricted to 36 months, the average period between the onset of symptoms and the date of operation is 26 months; 11 patients had been

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TECHNIQUE

Rabbits, after having had an area of skin shaved, were anæsthetised with ether, and a wound made on the right flank In most of the experiments a portion of skin about 1 sq in in area was removed, the subcutaneous tissues divided, and the powdered drug spread on the surface of the muscles The skin was loosely drawn together with a catgut suture In a second series, in addition to the skin wound, a portion of the extensor muscles of the thigh roughly the same size as the skin area was also removed

All the drugs were finely powdered and passed through a No 60 sieve The dosage employed was based on that recommended for local application in the Medical Research Council War Memorandum No 2 (1940) on the treatment of gas gangrene, in which 5–15 g of powdered drug is suggested as a suitable dose Since this dosage is for an adult male, 0 15 g per kg of body-weight, corresponding to just over 10 g for an adult of 70 kg was selected as the dosage to be applied to the rabbit wounds Blood samples were taken at intervals from the ear, and urine was collected as excreted for a week after operation by the use of a metabolism cage Chemical estimations were made by the method of Marshall and Litchfield (1938), and blank determinations were made in every case for the coloured urine samples Werner's method of estimation (1939) was tried and abandoned, as it was found to be useless for coloured urine samples and for the low blood-concentrations obtained with sulphapyridine

RESULTS

Sulphanilamide —A maximum blood concentration of 1 to 5 mg per 100 ml of "free" sulphanilamide was attained about 5 hours after application Thereafter the fall in concentration was rapid, and if it were required to maintain the level at about 2 mg per 100 ml, oral administration would have to be commenced 6 hours after local application Excretion was rapid, about 50% of the dose applied being eliminated in 24 hours About 90% of the excreted drug was in the conjugated form

Sulphapyridine —The level of free sulphapyridine was in every experiment very low, and all traces had disappeared within 24 hours The concentration of "total" drug reached a value of about 0 5 mg per 100 ml in 3–4 hours, and this only gradually decreased Excretion was slower than with sulphanilamide, about 7% of the dose applied being eliminated in 24 hours About 70–80% of the excreted drug was conjugated

Sulphathiazole —The maximum concentration of about 0 75 mg per 100 ml of free sulphathiazole was reached in 5 hours, and the subsequent decrease was less rapid than with sulphanilamide The rate of excretion was intermediate between sulphanilamide and sulphapyridine, about 18% of the dose being eliminated in 24 hours About 75% of the excreted drug was conjugated

Little difference was observed between the rates of absorption from wounds made in the skin, and from those involving the thigh muscles

The results of typical experiments are shown graphically in figs 1 and 2

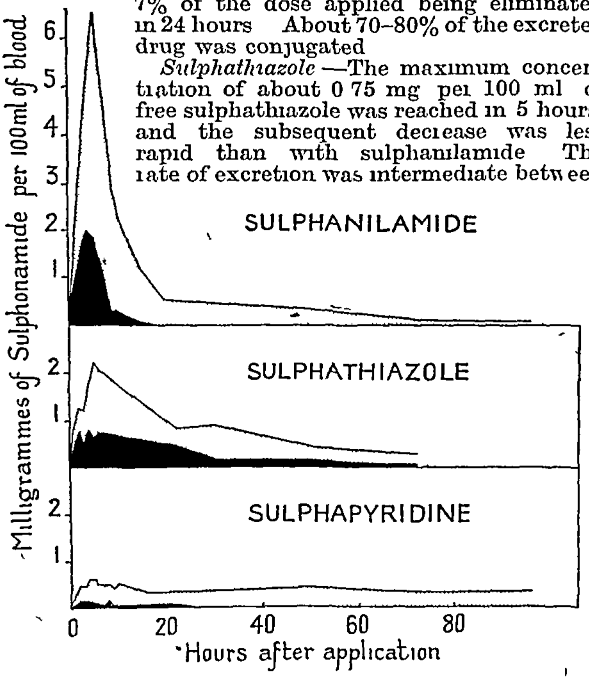

FIG 1—Concentrations of sulphonamide compounds in the blood after local application to wounds

In each figure, black = free sulphonamide, stipple = total sulphonamide

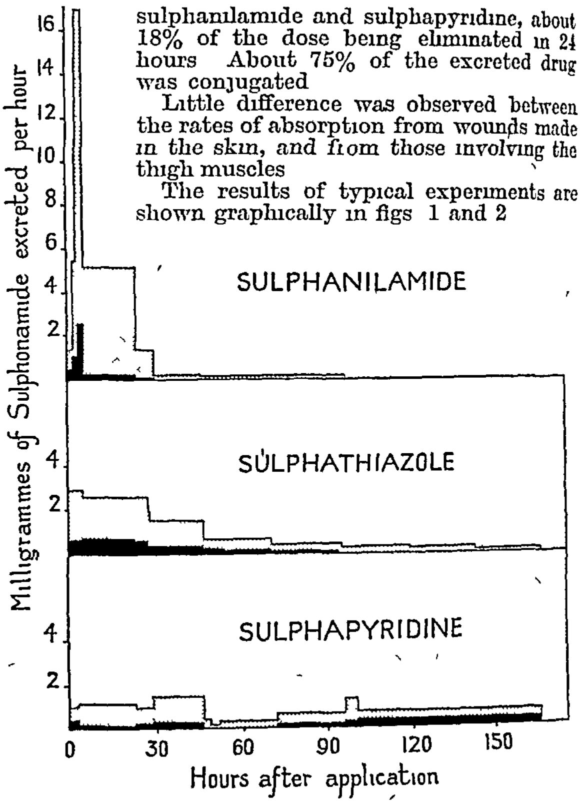

FIG 2—Urinary excretion of sulphonamide compounds after local application to wounds

COMMENTARY

The results show that although it is possible to obtain an effective concentration of over 2 mg per 100 ml of blood for a short period by the local application of sulphanilamide, this is not possible with either sulphapyridine or sulphathiazole These latter substances are removed too slowly from the site of application for a high blood-concentration to be produced, and although an increase in the quantity of sulphanilamide applied would increase the blood-concentration, an increase in dose of the less soluble compounds would not greatly raise the blood-concentration obtained unless the absorptive surfaces were very large, as in Herell and Brown's observations The proved clinical value of the substances when applied in doses as low as 5 g (Hawking and Piercy 1941) must therefore be due to the local effects of the drug Local application in experimental gas gangrene has been shown to be more effective than intraperitoneal doses by Hawking (1941), and more effective than oral doses by Reed and Orr (1941) If the effective prophylactic concentration of 2 mg per 100 ml of blood recommended by Fuller and James (1940) were required, this would have to be provided by supplementary oral dosage

All our experiments were made on clean, uninfected wounds It is possible that the rates of absorption from grossly infected wounds would be modified

SUMMARY

Sulphanilamide, sulphapyridine and sulphathiazole were applied to uninfected wounds in the rabbit, and the rates of absorption and excretion estimated

With the size of wound and dosage used, it was possible to obtain a blood-concentration of over 2 mg per 100 ml for a short period with sulphanilamide The other two compounds were not absorbed rapidly enough for this value to be attained

Sulphanilamide was excreted rapidly, sulphathiazole less rapidly, and sulphapyridine less rapidly still About 90% of excreted sulphanilamide, and 75% of excreted sulphathiazole or sulphapyridine was in the conjugated form

Our thanks are due to Mr J Williams for technical assistance

Continued at foot of next page

THORACOPLASTY FOR PULMONARY TUBERCULOSIS

By John V Hurford, M D Belf, M R C P, D P H
DEPUTY MEDICAL SUPERINTENDENT OF COLINDALE HOSPITAL (L.C C)

The material for this review is taken from the records of 69 male patients who had thoracoplasty at Colindale Hospital between 1933 and the end of March, 1930 The hospital does not receive many cases with early or limited tuberculous disease and the results show what can be done in an unfavourable field For example, in 1938–39, of 800 patients 33 were offered thoracoplasty and only 13 accepted

In 2 cases of our series of 69 the operation was not completed The remaining 67 fall into five groups according to the grounds for the operation —

		Cases and per cent
1	For parenchymatous disease alone	54 (80 5)
2	For draining empyema	8 (12)
3	For tuberculous empyema	1 (1 5)
4	After removal of wax	2 (3)
5	After extrapleural pneumothorax	2 (3)

The first group only will be reviewed in detail here For comparison, it is worth surveying some published results from other centres

Freedlander and Wolpaw (1937) reviewed 85 cases which correspond to the first group, and compared their history with that of 58 patients who had refused thoracoplasty, after from two to four years 57% of the surgically treated group had become closed cases (closed cavity and T B negative sputum), 13% were unchanged or worse, 9% improved, 14% dead and the remainder untraced, in the controls the corresponding figures were 10% "closed," 49% worse or unchanged, 7% improved, 26% dead and the rest untraced

Peters and Cornish (1938) found a disparity in results between those cases which had a complete and those which had a partial thoracoplasty Of 40 who had the complete operation, 21% were quiescent, 25% still active, 54% dead, while of 38 who had the partial operation, 50% were quiescent, 16% active and 34% dead The fatalities seem more than usually high

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PROCEDURE

The earlier, and many of the later, cases of the present series were anæsthetised with gas-oxygen-ether Cyclopropane, usually with a preliminary injection of Evipan, has been largely used since 1936, it is ideal during the operation but there is an impression that it has led to increased post-operative collapse In the last two years local anæsthesia has taken pride of place It might have been expected that the cases earlier in the series would have been submitted to fewer stages, in fact, up to December, 1936, an average of 2 stages was done in each, and there was only a slight increase—to an average of 2 4 stages—after that date Almost invariably the upper stage was performed first Disarticulation of the posterior ends of the ribs has been the rule where possible Since February, 1936, Holst and Semb's method of mobilising the apex of the lung by doing an extrafascial pneumolysis has been practised in 23 (42 6%) of this group After his last stage the patient is kept in bed for at least three months, and it is another thirteen weeks on the average, before he can be moved to a convalescent home or sanatorium in the country Few patients resume home life in under a year from the date of their operation While bed treatment continues, weights (gradually increased from 3 to 25 lb) are used to increase the falling-in of the chest-wall, and the patient is fitted with a brace when he gets up Massage to the limbs is started early

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The follow-up was done at least a year after the last stage in each case, and conclusions were based on interviews with patients and information received from tuberculosis officers Table I gives the findings in the cases where thoracoplasty was done for parenchymatous disease alone "Quiescent" as used in these tables includes some cases which are arrested or cured all patients so classed were sputum-negative and fit at least a year after operation

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ill for a year or less The radiograms in all cases except 1 showed proliferative changes, and most showed fibrotic elements as well, 12 (22%) showed exudative foci Radiological criteria do not reveal a high percentage with active bilateral disease (table II) An average of 2 2 lobes were actively affected in each

TABLE II—RESULTS ACCORDING TO DISTRIBUTION OF DISEASE AND SIZE OF CAVITY TO BE COLLAPSED

—	Unilateral, or healed disease in opposite lung				Active disease in opp lung
	Diameter of cavity			Total Cases	
	Under 1 cm	1–3 cm	Over 3 cm		
No of cases	9	15	18	42	12
Dead	2 (22 %)	1 (7 %)	6 (33 %)	9 (21 %)	1 (8 %)
Going downhill	0	2 (13 %)	0	2 (5 %)	0
Active disease	1 (11 %)	2 (13 %)	1 (6 %)	4 (10 %)	3 (25 %)
Quiescent	6 (67 %)	10 (67 %)	11 (61 %)	27 (64 %)	8 (67 %)

The numbers are too small to allow of an accurate conclusion In only 2 of the cases with active contralateral disease were cavities—small in both—in the opposite lung, and in another 2 there was a contralateral A P Two-thirds of the cases with large cavities who died did so within a short time of operation

General condition before operation—In 13 (24%) the patients' condition before operation was described as good, in the remainder usually fair Vital capacity has not been estimated until recently Special blood examinations play a part in our assessment of resistance and toxicity Differential white-cell count, Von Bonsdorff count (V B), erythrocyte-sedimentation rate and, finally, the calculation from these factors of the Houghton index (Houghton 1939) are useful The V B count and the Houghton index are each normal at approximately 260 In table III "good" blood is arbitrarily defined as having a V B count of at least 190 and a Houghton index of at least 200, "poor" blood as having a Houghton index below 165 or both index and V B count below 200 The erythrocyte-sedimentation rate has never seemed so useful as the full examination, but it has some value, the Westergren method was used here

TABLE III—BLOOD EXAMINATION AS AN INDEX TO RESULTS

—	V B count and Houghton index		Sedimentation rate	
	Good blood	Poor blood	15 or lower	20 or over
No of cases	24	22	22	21
Dead	2 (8 5 %)	4 (18 %)	1 (4 5 %)	6 (28 5 %
Going downhill	1 (4 %)	1 (5 %)	1 (4 5 %)	1 (5 %)
Active disease	2 (8 5 %)	4 (18 %)	3 (13 5 %)	2 (9 5 %)
Quiescent	19 (79 %)	13 (59 %)	17 (77 5 %)	12 (57 %)

TABLE IV—TYPE OF OPERATION IN PATIENTS WITH UNILATERAL DISEASE, EXCLUDING THOSE WHO DIED WITHIN A SHORT TIME OF OPERATION

—	Partial (8 ribs or less)	Complete (9 ribs or more)	Without pneumolysis	With pneumolysis
No of cases	24	12	19	18
Dead	3 (12 5 %)	1 (8 %)	2 (11 %)	2 (11 %)
Going downhill	1 (4 %)	1 (8 %)	1 (5 %)	1 (5 5 %)
Active disease	4 (17 %)	0	1 (5 %)	3 (16 5 %
Quiescent	16 (66 5 %)	10 (84 %)	15 (79 %)	12 (67 %)

Type of operation—Table IV suggests that a complete thoracoplasty may, because of more efficient collapse, be more effective than a partial one The addition of a Semb "strip" seemed to give a much more efficient collapse, but did not affect the results

Paralysed diaphragm at the time of operation—Paralysis on the same side was present in 13 patients, of these, 3 died within a short time of operation (2 of bronchopneumonia on the same side and 1 of sepsis) Paralysis of the opposite diaphragm was present in 2, of whom 1 died of cardiorespiratory failure (undoubtedly accentuated by the paralysis) after the first stage of the operation, the other died three years after thoracoplasty Omitting the fatal cases, immediate reactions were not common in those with paralysed diaphragms and bronchiectasis was not a common sequel We should hesitate now to do a thoracoplasty in a patient whose contralateral diaphragm was out of action

Other factors which might bear on results are failure of the operation to render the sputum negative and its failure to close a cavity On leaving the hospital 13 patients had positive sputum, 4 of these remained positive after periods of from one to four years, while 9 became quiescent It must be remembered that the patient usually goes on to a convalescent home or sanatorium

Of the 44 cases still alive, 3 had no cavity before operation Of the 33 in whom the lesion was quiescent the cavity had apparently closed in 29 and was reduced in size in 4 There were 8 patients who still had an active lesion or were going downhill, though in 2 the cavity was apparently reduced in size and in the other 6 had apparently closed, of these 6, however, 4 had disease in the opposite lung Tomographic examination was not available

CAUSES OF DEATH

The causes of the 10 deaths in the series of 54 were analysed and are shown in table V

TABLE V—CAUSES OF THE 10 DEATHS IN THE SERIES

Case	Cause of death	Time after operation
	Soon after operation—	
1	Postoperative sepsis with empyema	4 months
2	Hæmatemesis from gastric ulcer	10 days from 1st stage
3	Bronchopneumonia	3 weeks ,, 2nd ,,
4	Bronchopneumonia	1 week ,, 1st ,,
5	Cardiorespiratory failure	1 week ,, ,, ,,
6	Doubtful	3 months ,, ,, ,,
	After discharge from hospital—	
7	Spread of disease	6 months
8	,,	5½ years
9	,,	1 year
10	Hæmoptysis, probably from same side	1¼ years

Thus the immediate operative mortality is 6 (11% of the series of 54), the delayed 4 (7%) and the total 10 (18 5%) The case of hæmatemesis might be eliminated as having died from a cause outside the chest, but the operation cannot be exonerated from responsibility

SEQUELÆ

Scoliosis—It is difficult to prevent this deformity In 62 radiograms examined at varying periods after thoracoplasty, concavity of the thoracic spine to the opposite side was slight or absent in 18 (29%), moderate in 27 (43 5%), advanced in 13 (21%) and greatly advanced in 4 (6 5%), a complete operation had been done in 6, 10, 8 and 4 of these cases respectively The extent of scoliosis was assessed from the position of the curve and its angle with the vertical (slight, under 70°, moderate, 7–15°, advanced 15–30°, greatly advanced, over 30°) Probably only the greatly advanced deformity shows itself when the patient is dressed Scoliosis may possibly aid collapse of the diseased lung by further narrowing the chest, but it has the disadvantage of increasing the reputation of the operation for deformity-production among those who may be asked to undergo it

Lowering of vital capacity—Very few of the quiescent cases are dyspnœic Of 26 patients whose vital capacity was measured some time after operation, 18 had a V C of 2000 c cm or over, 1 had a V C of 3500 c cm after a six-rib thoracoplasty

Symptomless bronchiectasis on the operated side—Of 27 cases examined by bronchography at varying periods after the last stage, 5 showed early tuberculous bronchiectasis in the lower lobe, probably due to lobar collapse In 2 other cases, after an interval of three years slight tubular bronchiectasis had appeared in the middle zone of one, and had become more definite in the base of the other   Some patients (6 in this series) develop a mild saccular bronchiectasis in the upper lobe   None of these patients had symptoms of bronchiectasis when examined   It is possible, of course, that they may develop such symptoms as time goes on

Psychological upsets—Rarely a patient develops a feeling of inferiority after the operation and does not acquire the buoyancy which the improvement in his health would justify   Usually he was previously of a nervous temperament, was never keen on the operation, and subconsciously regards himself as deformed after it   Rather different is the patient who persists in regarding himself as in fragile health though the thoracoplasty may have been very successful , he has developed an anxiety about his health which is perhaps not remarkable after a lengthy illness

CONTROL SERIES

The controls used are nearly all patients who refused thoracoplasty up to the end of March, 1939   The comparison is slightly favourable to them, because there were more of them in the earlier years than of patients who had thoracoplasties , some of the thoracoplasty patients, therefore, had more time in which to do badly   The distribution in years was as follows

	THORACOPLASTIES Cases and per cent		CONTROLS Cases and per cent	
1932	1	(2)	0	(0)
1933	7	(13)	1	(2)
1934	8	(15)	5	(11 5)
1935	7	(13)	10	(23)
1936	11	(20)	5	(11 5)
1937	6	(11)	4	(9)
1938–39	14	(26)	19	(43)
Total	54		44	

Age-distribution is comparable in the two groups , most patients fell into the 17–25 and 26–35 age-groups   The average extent of the disease as judged by the radiogram did not seem to differ   Several cases previously recommended for operation who do not, by present standards, seem fair controls have not been included   The results in the controls are set out in table VI, and should be compared with those in table I

TABLE VI—FINDINGS OF FOLLOW UP INQUIRY MADE AT LEAST A YEAR AFTER THORACOPLASTY HAD BEEN ADVISED BUT REFUSED

—	All cases	Operation advised at least 3 years before
No of cases	44	24
Dead	20 (45 5%)	14 (58%)
Going downhill	11 (25%)	5 (21%)
Active disease	6 (13 5%)	2 (8%)
Quiescent	7 (16%)	3 (13%)

Of the 7 controls now said to be quiescent 5 are reported to be working   Of these 7, 5 had cavities ranging from 1½ to 3 cm in diameter, 1 was discharged with a partial A P and no obvious cavity, and 1 had no cavity and minimal disease and his sputum was negative on discharge   The controls who died after leaving hospital had lived for an average period of two years after refusing thoracoplasty

CASES WITH SECONDARY INFECTIONS

The cases briefly considered below cannot be included in a review of tuberculous patients who have undergone thoracoplasty, because in them we are dealing not with the treatment of phthisis but with that of phthisis plus a complication

Up to March, 1939, 8 secondarily infected empyemas were operated on ; 3 of these patients are dead, 1 has active tuberculosis and a discharging sinus, 4 are fit and without active disease but still have a sinus   The pleural cavity was obliterated in none of these   Of those who died, 2 did so ten months and 1 six days after operation   Both the former developed a spread of tuberculosis in the opposite lung, and the latter had wound sepsis and presumably cardiorespiratory failure   Excluding him, an average of ten ribs were removed in each of the 8 patients   These cases help to justify the sense of discomfort felt by physicians and surgeons confronted by an empyema superimposed on tuberculosis of the lung

One case of tuberculous empyema with active phthisis was treated by thoracoplasty   This man had a ten rib operation and developed a pleurobronchial fistula, between stages, but is still alive 4½ years later   Thoracoplasty with removal of an unsuccessful wax implant was performed in 2 cases , one patient's disease is arrested and he is working 6½ years afterwards   In the other an apical cavity was accidentally opened during the first stage and he died ten days later   Such an accident is not uncommon when an apicolysis has been done previously—we have had another case since—and does not depend on the skill of the operator   Thoracoplasty was carried out on 2 cases of infected extrapleural pneumothorax   One of these patients is untraced, though believed to be alive , the other died soon after the first stage from general toxæmia and sepsis with tuberculous spread to the opposite lung

The 2 uncompleted thoracoplasties should be mentioned here , they have not been included in the body of the report because in both the intention of the surgeon was halted for reasons not deriving from the operation   One patient was considered to be psychologically unsuitable, after the first stage, and probably this conclusion should have been reached earlier , the other patient was advised to have bilateral partial thoracoplasty, but refused the second operation

DISCUSSION

Of 54 patients with fibrocaseous tuberculosis affecting an average of over 2 lobes each, 35 (65%) have been rendered quiescent by thoracoplasty   This figure must be compared with 7 (16%) in a control series of 44 who did not have the operation   In each series most patients showed cavitation   Excluding immediate deaths, thoracoplasty apparently closed cavities in 84% of those who had had them   Unfortunately war-time conditions have prevented personal examination of the 7 controls said to be quiescent

Of the 44 thoracoplasty cases still alive 28 (64%) and of the 35 who are quiescent 25 (71%), are known to be working   These results are good considering that before operation the patients were chronic invalids   Why are not 100% of quiescent cases at work ?   Undoubtedly there is a form of employment which each of them could manage—if he could find it   But often the patient has had a long period of sanatorium treatment and perhaps previous attempts to resume normal life have been interrupted by ill health   Moreover a long dorsal scar, a collapsed hemithorax and perhaps some scoliosis, however little outward deformity they produce when the patient is dressed, often make him (and sometimes his tuberculosis officer) feel that he is decidedly C3, whereas he may really be capable of quite hard work   His disability, real or supposed cannot be kept hidden from prospective employers, who will often take back an old employee but are reluctant to engage men who are unknown to them   Colonisation would possibly be the answer, but in the most peaceful of times it cannot be provided for all

Blood examinations (Houghton index, erythrocyte-sedimentation rate) probably act as a useful pointer to fitness for operation   In two or three cases, however, operation was indefinitely deferred because their blood seemed unduly poor, and I now feel they should have been given the benefit of thoracoplasty   In other words, though a patient should of course be made as fit as possible before operation, there may be a peak of improvement beyond which his disease will not allow him to rise and at that point no laboratory figures should be allowed to offset the clinical indications for thoracoplasty

The size of the original cavity did not influence the number of cases which became quiescent, though the death-rate was highest in those with the largest cavities   Of 12 patients who had a complete thoracoplasty 10 (83%) became quiescent ; of 24 patients who had partial thoracoplasty only 16 (67%) became quiescent   The introduction of the Semb modification did not change the results of partial thoracoplasty for the better, but many more figures would be required to decide the value of this procedure   It is possible for a thoracoplasty case to leave hospital with positive sputum which later becomes negative, this happened in 9 out of 13 cases, and confirms my opinion that the operation should be an incident in a period of sanatorium treatment and should not be regarded as an immediate cure in itself

In the few examples given of thoracoplasty in complicated cases the results contrast unfavourably with those of patients who suffered from parenchymatous lung disease only.

SUMMARY

A series of 69 tuberculous patients on whom thoracoplasty was carried out at Colindale Hospital up to the end of March, 1939, is reviewed

Of 54 patients who had parenchymatous disease only and were followed up after at least a year, 10 (18%) were dead, 2 (4%) were going down hill, 7 (13%) still had active disease and 35 (65%) were quiescent The figures for 44 comparable controls were 45 5% dead, 25% going downhill, 13 5% with active disease and 16% quiescent

Of 44 thoracoplasty patients still alive, 28 (64%) are *now working*

No details of chest surgery are given

The operations were performed by Mr R C Brock, Mr J E H Roberts, Mr N R Barrett, Mr T Holmes Sellors and the late Mr H P Nelson I should like to mention Dr F Heaf and Dr L E Houghton who fostered the surgical unit at Colindale, and thank Dr W E Snell, the medical superintendent, for his kind advice, Dr W Allen Daley, medical officer of health to the London County Council, for permission to publish this paper, and Miss L Cornelius for her help in the follow-up

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Reviews of Books

La thoracoplastie elective

By J Angirany, L Michon et A de Micheaux Paris Masson et Cie Pp 125 $1 35

Many modifications have been made in the operation of thoracoplasty since it passed into common use and in this work the authors put forward a clear classification of their views, based on what must always be the ideal combination—the experiences of physician and surgeon working together over several years in the same sanatorium The importance of obtaining a selective collapse is strongly set out and the authors aim at restricting the sacrifice of ribs and conserving a maximum of healthy lung tissue This preference for a limited operation is possibly unduly stressed, as are their objections to total thoracoplasty, which they claim leaves the patient weak and very vulnerable to any intercurrent respiratory infection attacking the healthy lung Undoubtedly the patient who has the minimum of effective collapse is at an advantage, but the natural tendency to do too little rather than too much often leads to an indifferent result A partial or subtotal thoracoplasty supplemented by a phrenicectomy is here advocated in place of the total operation, though it is doubtful if this course would be supported by surgeons who have experienced trouble in the small residual area of uncollapsed lung at the base Complementary thoracoplasty—a term applied to rib resection associated with an existing pneumothorax—is regarded favourably, since any improvement produced by the pneumothorax is maintained and the shock of operation and risk of basal spread are reduced Substitution thoracoplasties can be used to replace a contraselective pneumothorax or may be added to an extrapleural pneumothorax which is either incomplete or is re-expanding too rapidly The conditions for primary thoracoplasty (thoracoplastie d'emblee) are set out in detail and the weak points in selecting the right patient and assessing the character of the disease indicated From the variety of methods of anæsthesia discussed it is clear that the authors have not decided on a standardised technique, though their leaning is towards carefully chosen basal narcotics They describe the aspects of the operation in somewhat unnecessary detail, but the postoperative complications receive well merited attention The main text is devoid of illustrations or statistics, but there is a well-illustrated section of case reports, dealing rather with "problem" cases than straightforward ones

Toracoplastias

By Jorge A Taiana, Buenos Aires Pp 89

In this admirably produced and illustrated monograph presented as a thesis for his doctorate, Dr Taiana surveys the evolution and practice of thoracoplasty Analysis of 100 cases indicates the principles applied in selecting the suitable type of case and the extent of the operation to be performed It is significant that with increasing experience the operative mortality shows a distinct drop—presumably owing to a more accurate selection of cases rather than to improvement in technique Careful clinical and radiological investigation are essential, and the author also places considerable reliance on attempts to estimate the functional capacity of the lungs before operation, in the absence of a more simple method, he recommends bronchospirometry as introduced by Jacobæus as the most satisfactory procedure Tomography which in this country is usually reserved for exceptional cases is used freely since Dr Taiana holds that it enables the diseased area to be more accurately studied than does any other method and that it facilitates the planning of the operation He also brings out the value of small preoperative blood transfusions He has carefully studied the method of action of thoracoplasty on the lung and shows that two main forms are now in use The operation commonly practised aims at obtaining collapse of such a degree that the size of the affected area is reduced, immobility is obtained and mechanical strains relieved In the other category are the new, more experimental, "elastic" operations which aim at encouraging healthy atelectatic lung—round a cavity, for example—to re-expand, fill in areas where tissue has been lost and compensate for the cicatrising effect of healing lesions The failure of thoracoplasty to achieve its desired effect in some cases justifies the consideration of such other methods as drainage of cavities, obstruction of bronchi, excision of lung and so on These ancillary procedures are in fact being given a good trial in many clinics

As a review of the development and present position of thoracoplasty this monograph makes excellent reading

General Bacteriology

By D B Swingle, professor of bacteriology and dean of the division of science, Montana State College London Chapman and Hall Pp 313 16*s*

Is bacteriology a branch of biological science or is it a mere tool for other sciences without any real status of its own? The answer to this question in the preface to this book would almost certainly be that at least nine out of ten practitioners and teachers alike think of bacteriology only as a convenient means to diagnosis Professor Swingle is first and all the time a biologist, so that his point of view is wide, he has the American gift of orienting his subject to its broadest issues, and can write about life in relation to other life without bothering too much about the infinitesimal part of bacteriology which covers human disease The student who masters this book will not be able to repeat the details of the Wassermann test but he will be able to follow intelligently any antigen-antibody reaction He will learn easily and with pleasure much about the bacteriology of soil, milk, food and water, and how bacteria can be trained in commerce to do a specific and highly complicated job of organic chemistry The author thinks that students should be biologists before tackling specialised lines like medical bacteriology, and our own medical curriculum does lip-service to this belief by supplying a small antigenic dose of biology before the student is swamped in other work It is doubtful whether beginners in this country will respond to Professor Swingle's defence of classifications it is well to know that blue-green algæ are the bacteria's nearest relatives but it is not so easy to remember whether a yeast belongs to the genus zygo or schizosaccharomyces

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THE LANCET

LONDON SATURDAY, MAY 31, 1941

FRIENDLY FOREIGN DOCTORS

THE debate in Parliament on May 13 [1] may do something to clear the air in regard to the difficulties which have arisen in making full and rapid use of the medical men and women from enemy and occupied countries who have sought refuge with us It was clear that some of the speakers had an imperfect understanding of all the ramifications of this problem Even the reply by Miss HORSBURGH, parliamentary secretary to the Ministry of Health, left some of them unexplained Laymen might be excused for suspecting that professional obstruction was causing the delay, since it is true that the British Medical Association resisted, in the pre-war years, a too free absorption of refugee practitioners coming to this country with the object of acquiring British qualifications and gaining complete and permanent freedom to practise medicine here , and even then the leaders of the association had difficulty in convincing the rank and file of the profession that they had not yielded too much It is equally true, however, that the Central Medical War Committee was urging the employment of foreign practitioners on the Government long before the regulations were made which authorised their employment and before the Robinson Committee specifically recommended it The suggestion, therefore, by medical Members of Parliament that some of the delay might be attributed to an unsympathetic attitude on the part of the central committee was not justifiable

It is regrettable that the absorption of foreign practitioners, once it became possible, should have been so slow Even the Ministry's figures seem to be tentative and provisional, but it appears to have been admitted that the number of such practitioners in the country is about 1350, and that not more, and probably less, than 200–250 had been placed after four months' endeavour [2] By that time, however, the machine had begun to work smoothly and 100–150 are now being passed through each week There is still room for acceleration, but, as Miss Horsburgh pointed out, no part of the "vetting" of foreign applicants is dispensable They must be acceptable to the employing body, they must be placed where they are really needed, their qualifications must be satisfactory, their proficiency in the English language must be adequate (despite rather flippant parliamentary remarks on this subject) and their loyalty to the Allied cause must be beyond question Different authorities are, and must be, concerned with these requirements, and it is not necessarily a waste of time that one of them, the Central Medical War Committee, should act as a clearing house for the others The procrastination has occurred in the operation of the machine The circular (No 2312) of the Ministry of Health giving sanction to the employment of such medical men and women in hospitals was not issued until March 17 Hospital authorities were not immediately convinced that these doctors would be acceptable, especially when their engagement might entail the removal of some of their existing and experienced British doctors to the fighting services When they did take steps they found to their consternation that a post they had hoped to fill quickly must remain vacant for as long as two months before the practitioner was finally approved at the centre It was pointed out in the debate that the delay was mainly at the Home Office, where the credentials of the doctor as an alien are looked into, but it was cogently remarked that everything that the Home Office could by any means ascertain should already have been known to them, since most of these men and women had already been in our midst for a long time The truth appears to be that the Home Office is not the only Government department concerned, and that the blockage occurs in another office which already has an unenviable reputation in this respect, and which was not mentioned in Parliament Another difficulty which was ignored has arisen from the fixed proportion of foreign doctors to total staff which may be allowed in any one institution At first sight it seems reasonable that not more than ten per cent of the medical staff should be aliens in hospitals over 100 beds in size and not more than twenty per cent in smaller hospitals, these being the proportions laid down in the Ministry's circular But many special hospitals, which have even greater staffing difficulties than general hospitals, carry a small number of medical officers in proportion to their bed accommodation They seldom have the five or ten doctors necessary, if their accommodation is respectively under or over 100 beds, before the employment of even one foreign doctor is permissible For instance, a large tuberculosis organisation controlling nearly 2000 institutional beds has not one institution which could comply with the Ministry's requirements, and is yet anxious to give employment to doctors from abroad It seems reasonable that such an organisation should be regarded as a simple unit for this purpose, provided that there are sufficient safeguards against excessive staffing with foreign doctors in any one institution

When all these impediments have been overcome there still remains the fact that doctoring on the continent of Europe is not just the same as it is here, a fact brought out by Prof M GREENWOOD on p 706 The training and experience of foreign practitioners may be better or worse than ours but it is different , and they are accustomed to deal with people with other traditions and outlook Many of them have specialised in a way which would not qualify them to rank as specialists in this country, but has nevertheless unfitted them to cope immediately with the general work expected of a resident medical officer in a general hospital Some time must elapse before they can pull their full weight in the posts now open to them It would be foolish, on the strength of one or two exceptional instances known to members of Parliament, for anyone to suppose that British-trained doctors can be replaced straight away, and on a large scale, by foreign ones without at least a temporary loss of efficiency Hospitals are ready, however, to make the necessary adjustments as soon as the machinery for recruitment is tightened up

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[1] See *Lancet*, May 24, 1941, p 678

[2] In his address opening the G M C session on May 27 the President said that there are now 294 names on the temporary register of practitioners from the Empire, the U S A , and Allied and enemy European countries

THE SCOPE OF THORACOPLASTY

MANY physicians are still reluctant to submit their patients with pulmonary tuberculosis to an operation that they regard as being both dangerous and mutilating, but thoracoplasty has nevertheless become established as the mainstay of active treatment for cases in which pneumothorax or any of its allied intrapleural manœuvres have failed to bring about the desired result A general survey was given by Mr BRUCE DICK in a Honyman Gillespie lecture reported later On another page Dr HURFORD records the results of 69 thoracoplasties performed at Colindale Hospital between 1933 and 1939, and gives a detailed review of the 54 patients suffering from parenchymatous disease The follow-up was made at least a year after the last stage and the results show that 65% were then quiescent, 13% still had active disease, 4% were going downhill and 18% had died (6 out of the 10 deaths occurred immediately or soon after operation) Of the 44 patients known to be alive a year after the operation, 65% were working, including 2 patients with active disease A control series of 44 patients in whom thoracoplasty was advised but refused revealed 16% with quiescent disease, while 46% had died HURFORD's figures show that thoracoplasty performed by skilled hands on patients who have been expertly selected for the operation does not carry such a terrifying mortality as many people have supposed

The type of disease requiring collapse or relaxation therapy varies within wide limits It embraces, at one end of the scale, a patient with acute fulminating phthisis in whose interests even the artificial pneumothorax needle should be used with the utmost caution, and at the other extreme the robust and healthy looking consumptive who has satisfied the criteria for constitutional quiescence, but whose cavity is still patent and whose sputum remains positive Artificial pneumothorax holds and will continue to hold a pre-eminent position in the control of recent disease and in cases where the pleural cavity is free from adhesions It is for the chronic fibroid and adherent type of phthisis that thoracoplasty has hitherto been reserved, and operation is usually withheld until all evidence of activity has been excluded May it not be that in many such patients the operation is performed too late and that too much is expected of it ? It is hard to see how even a well-planned and extensive thoracoplasty can bring about firm healing of a thick-walled fibrotic cavity It can deform it and convert it from a sphere into a slit, but so far there is scanty evidence that complete and permanent healing has resulted The post mortem material for this research is not often obtained and only from this aspect can we determine the full success of the operation Collapse of both healthy and diseased tissue is the basis on which thoracoplasty is founded, and this principle has been aimed at in the standard operations There is, however, another aspect which has been given recent prominence in the works of such authorities as CORYLLOS and MONALDI, and is further noted in two monographs reviewed in this issue It is the possibility of utilising healthy but atelectatic lung in the process of healing The space which constitutes a tuberculous cavity does not always represent the actual amount of tissue lost, distension and centrifugal traction may account for much of its size, and as a result the cavity wall may contain a good deal of collapsed but otherwise normal lung tissue. If these "dynamic" effects can be relieved, the healthy tissue will re-expand and occupy some of the space lost by ulceration and will compensate for the shrinkage that occurs in the normal healing process of fibrosis The "static" effects which are the result of complete and final cicatrisation and sclerosis cannot be compensated for in this way, and require the more usual form of thoracoplasty rather than an elastic procedure which might succeed in the dynamic type of lesion If this distinction could be made clinically, it is possible that an increased field for surgery would be provided, but there are obvious difficulties ANGIRANY and his colleagues stress the value of kymography in detecting the degree of movement among the tissues in the diseased area, while TAIANA has found that extensive use of tomography helps to assess the extent and condition of the lesions

In any operation on a tuberculous patient there is always the possibility of flaring up a hitherto quiescent focus or an unsuspected active lesion, and most of the attention in selecting suitable patients is directed towards making sure that any active or exudative element is minimal Extrapleural pneumothorax, when it was revived a few years ago, was regarded as a potential bridge over the gap between acute and chronic disease It was worthy of the extended trial that has been given it, and, even though it has been found wanting in many respects owing to various complications, it has led to some relaxation of the rigid rules that governed the selection of cases for thoracoplasty and widened the scope of the latter The problem of assessing activity cannot always be settled today by the most careful clinical and radiological examination Detailed study of the blood picture (including the differential white-cell count, von Bonsdorf count and sedimentation-rate), as advocated by HOUGHTON, has a definite value and might well be given a wider application Thoracoplasty can only be used to combat the earlier type of disease if we can forecast with stricter accuracy which patient is likely to go wrong This will tax to the utmost our clinical acumen and all our laboratory resources, but the collating of all forms of evidence may enable the student of constitutional medicine to point out the safe way

THE NATIONAL LOAF

IN its first memorandum on bread[1] the accessory food factors committee of the Lister Institute and Medical Research Council advocated the use of wheat flour in which 80–85% of the grain was extracted instead of the usual 70–75% as a step to improve the health of the nation, and they also recommended that calcium should be added to bread The Government adopted the second recommendation but not the first and announced their decision to fortify white flour with vitamin B_1 and calcium A year has passed but the bakers have still not received from the millers flour containing either added vitamin B_1 or calcium and there seems no certainty when they will Meanwhile the Government, without much enthusiasm, have adopted a loaf baked from 85% extraction flour without added calcium as the national loaf and e encouraging us to eat it But they have not plained the situation, and the public are inclined to spect that some sort of war-time substitute is being fered them Few people have grasped that the tional loaf is probably the best bread judged on its od value, that they have ever eaten, for it has been lected after a most careful scrutiny of the nutritive lue of the different parts of the wheat grain In illing white flour 70–75% of the grain is used, aving at least 25% of the grain not normally used r human food If we are going to eat 85% of the ain we are going to eat another 10 parts out of the sually unconsumed 25 parts, but obviously we have choice as to which 10 parts we choose, and it is on e choice of these 10 parts that great care has been vished On another page is published a second emo on bread from the M R C in which the parts of e grain to be included in the 85% extraction flour re defined in detail, and we are told the reasons for e choice

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[1] See *Lancet*, 1940, 2, 143

These reasons were not all nutritional , the æsthetic ne of providing the whitest possible loaf compatible ith nutritive excellence was never lost sight of The loaf is cream coloured and brings you the cream f the wheat ' might be used as a slogan to express he ideal of the Ministry of Food's advisers in their ish to comply with what is believed to be the prevailing popular taste The digestibility of the loaf lso received attention, and a low content of fibre r so-called roughage, not more than half that of holemeal, was fixed so that delicate digestive tracts hould not be irritated In 85% flour, as defined in he memo, the purely nutritive advantages which re undisputed are the higher content of vitamin B_1, f the vitamin-B_2 complex, of iron, and of protein of ood quality There is one admitted drawback he browner the flour the more it contains of phytic cid and its derivatives, whose action is to precipitate nd make unusable not only the scanty calcium in the read itself but also that in the rest of the diet There s little of these substances in white flour , in 85% xtraction flour there is a good deal more but only bout half as much as in wholemeal It was because of the extra phytic acid that the M R C committee originally advocated the addition of calcium to the 85% flour which they were recommending Most dietitians agree that it would be a good thing to add calcium to white flour, since there is an insufficiency of calcium in small-income diets containing much bread, but the reason for adding it to higher extraction flours is much more cogent, and there can be no serious argument against it from the trade since the millers are already in the habit of " improving " the baking properties of flour by adding acid calcium phosphate in about the same amount as it is now recommended to add calcium carbonate In self-raising flour the amount of calcium salt habitually added is much greater

When the M R C 's new memo has been read, the reader is left wondering why the policy of fortifying white bread with vitamin B_1 should still be pursued by the Government The arguments for adopting 85% extraction flour with added calcium for universal consumption as soon as present stocks of white flour are exhausted seem overwhelming. Both the national (85%) loaf and a fortified white one promise extra vitamins but the national loaf provides others besides B_1 Further, the supply of protein in our present diet is meagre, and the opportunity to introduce more protein of better quality by a simple change in our most widely used foodstuff should not be missed Lastly there is the need of shipping space In the last war this imperative necessity drove the extraction of flour to 95% , a general advance to 85% now would afford an appreciable relief Against the change can only be set popular prejudice (much of which will go when everyone has sampled the national loaf), the better keeping qualities of white flour, and an understandable reluctance to scrap the machinery which is now producing vitamin B_1 cheaply and on a large scale

Annotations

A GERMAN WAY OF DETECTING METALLIC FOREIGN BODIES

On May 16 a speaker on the German radio described a new device by which, he claimed, bullets, shell splinters needles and other metal objects can be readily located This metal finder, developed by the firm of Siemens and their medical advisers, depends on the use of a high-frequency oscillator of small intensity The tuning coil of a small short-wave transmitter is fitted into a sterilisable porcelain probe, 10 cm long and 10 mm in diameter , if this coil approaches a metallic substance—such as a splinter in the operation area—the inductance of the coil will change, and hence so will the frequency of the transmitter The change of frequency, which may be very minute, can be made audible by combining these oscillations with those of a second short wave transmitter oscillating at a slightly different frequency, and so obtaining oscillations at the beat frequency, amplifying them and passing them to a loud-speaker The apparatus has an equally good reaction to all metals, including the large group of light metals now being increasingly used which cannot be located by magnetism It is also extremely sensitive and can trace the minutest particles Tests carried out during more than a hundred operations have proved its worth, and so far it has never failed, even in such delicate cases as the localisation of a sewing needle in the lungs or a splinter the size of a pin's head in the knee joint On the contrary ' such difficult operations can only be attempted with the hope of certain success," said the broadcaster, "with the aid of the metal-finder " The apparatus is so sensitive that all metal instruments within a 10 cm radius must be removed while the probe is in use , porcelain towel-clips have therefore been introduced and have proved satisfactory The Germans are hoping to begin distribution of the apparatus to hospitals and field hospitals within the next few months

THE STORED BLOOD-CELL

The increasing use of blood-derivatives as transfusion fluids makes it necessary to keep in mind that none of them has all the therapeutic properties of fresh blood To carry oxygen red blood-cells still capable of functioning are needed It is now generally admitted that the cells of stored blood deteriorate with age, and that as Whitby[1] puts it their survival-time in the recipient is a function of their fragility This does not mean that blood stored for seven or eight weeks may not be used in an emergency, for such blood has often been given with benefit, though it has also produced reactions The real question is how long blood can be stored and still retain a large part of its therapeutic value without becoming at the same time risky to administer Crosbie and Scarborough[2] have studied the progressive spherocytosis and the individual variations in blood during storage and in the main agree with earlier workers as to the time of the stored erythrocyte's change of life The final test, however, is to watch the behaviour of the stored cells in vivo, and we have already noted[3] how this may be done with the ABO and MN factors This method has been used several times, Mollison and Young,[4] for example, have followed the fate of 26 transfusions given to 20 patients and estimated the number and nature of donor cells by differential agglutination They conclude that a high proportion of cells stored in the standard glucose citrate saline solution up to 18 days survive in the recipient probably as long as do fresh cells, if the blood is 20 days or more old cell destruction in the recipient is more rapid, though a diminished number of cells still survive for many days or even weeks[5] With blood seven or eight weeks old jaundice is fairly common A S Weiner's much-quoted view that a day in the ice chest is equivalent to six in the blood-stream is probably exaggerated It seems, then, that most of the laboratory and clinical evidence supports the three weeks time limit for storage, we can be reasonably sure that blood stored for less than this time will not cause either more or more severe reactions than fresh blood, nor will its therapeutic properties be seriously impaired

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[1] Whitby, L E H *Proc R Soc Med* March, 1941, p 257

[2] Crosbie, A and Scarborough, H *Edinb med J* April, 1941, p 253

UNRECOGNISED CYSTICERCOSIS

MacArthur has held for some years[6] that cysticercus cellulosæ, the larva of the tapeworm *Tænia solium*, is commoner in Britain and has more serious effects on man than has been suspected He early noted that in the Army about 100 new cases of epilepsy were occurring annually in men stationed abroad who had previously been well and came of healthy stock Moreover, occasional cysticercus infections had been reported, and all the men so affected had this type of epileptic history It was arranged that all epileptic cases among soldiers should be admitted to Millbank Hospital and MacArthur found,[7] among 22 consecutive admissions for epilepsy, that cysticercus cysts were present in 12 In addition to fits, the patients showed paralyses and mental disturbances ranging from a tendency to "act silly" to acute mania, melancholia, delusional insanity and dementia præcox[8] MacArthur's suggestion that a search of hospitals and other institutions would reveal hundreds of infections was received with scepticism, yet his own control investigations,[9] made on fleeting visits to mental hospitals, disclosed several unsuspected cysticercus infections and add weight to his suspicion that many more would be revealed by a systematic search such as he has in mind Patients with a good family history who had developed epilepsy in adult life, after service or residence abroad, would have to be submitted to X ray examination of the whole body at intervals over a period of years MacArthur finds that while these parasites live they may harm their host little This is confirmed by Evans,[10] who has published radiograms showing hundreds of calcified cysts in the muscles of the thigh, arm and shoulder of a man who, after three days in hospital following a fit, attended the Highland games at Crieff and took second place in the long jump When cysts die they absorb fluid from the host's tissues, increase in size and if they lie in the brain cause increasing damage In a cyst which lies near the surface the tenseness can be felt, and the fluid and scolex are ejected forcibly when it is opened When cysts are present in large numbers a temporary diffuse swelling of the affected muscles appears which give to a spare man the aspect of a professional weight lifter Death and swelling bring new cysts to light from time to time After death the scolex alone or the whole cyst wall may calcify, and only then does the radiogram take its place in diagnosis Eosinophilia is not helpful in the established disease Even when nothing can be done for the patient it is important to establish the diagnosis If the epileptic has children it relieves his fear that they will suffer from a hereditary taint It also takes his illness out of the category of "constitutional" (in which true epilepsy is classed) into one attributable to military service, so that he is no longer in danger of losing his few shillings of reservist pay The oftener these infections are recognised the greater is the opportunity to estimate the effects of parasiticidal treatment This is not easy, because whether treated or not most surface cysts disappear in time, sometimes rapidly, with or without calcification, thus there is often a stage—before another set of the cysts already in the body swell up—in which there is no evidence of the infection A drug to be safe must kill the parasite without causing its distension, and this does not seem an impossible hope seeing that many men with advanced infections have never been ill or missed a game of hockey or football There is no good evidence that the cysticercus is necessarily introduced into the body by auto infection, most patients give no history of having harboured a tapeworm The eastern custom of using human manure in the growing of vegetables is suspected of providing a source, but there is also evidence that ascaris and oxyuris eggs may be air borne The onchosphere's ample coating suggests that the egg is well fitted to withstand drying while blowing about in the dust The last annual report on the health of the Army in India contains only one record of epileptiform fits associated with cysticercus infection, it would be valuable to know whether this fall in incidence has followed special hygiene or prophylaxis In the last 7 years this syndrome has been reported from Peiping, Singapore and Madras, and a thorough search might well reveal cases among our own general public

THE MIND OF THE CRETIN

At one time it was believed that if a cretin was given adequate quantities of thyroid early enough his mental and physical development would be normal Then the pendulum swung over, and it was generally held that, though physical development might be normal as long as the patient was getting thyroid, normal mental growth was seldom, if ever, attained Goodkind and Higgins,[1] of Boston, having under their care twenty three cretins who had been receiving thyroid for periods ranging from 5½ to 24 years, decided to settle this question To prove thyroid deficiency, the thyroid treatment of twenty-one of the patients was omitted for 8 weeks, the blood cholesterol and basal metabolism were estimated after 4 weeks and again at the end of the 8 week period In most patients these laboratory tests demonstrated hypothyroidism after 4 weeks and in all after 8 weeks The blood-cholesterol level is well established as an index of thyroid insufficiency, hypothyroidism being accompanied by hypercholesterolæmia They were able to show a close correlation between blood cholesterol levels and basal metabolic rates, thus establishing that either test may be accepted as a convenient measure of thyroid function They grouped their patients according to their intelligence quotients (thyroid was being given at the time of the tests) and found that six had normal intelligence, four of these having an I Q above 100, six were of low normal intelligence with I Q s between 72 and 87, and eleven were retarded, with I Q s below 70 Thus the analysis shows that normal mentality can and does occur in a fair proportion of treated cretins, and it would be natural to suppose

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[3] See *Lancet*, 1939, 2, 1326
[4] Mollison, P L and Young, I M *Quart J exp Physiol* 1940, 30, 313
[5] Mollison and Young, *Lancet*, 1941, 1, 420
[6] MacArthur, W P *Trans R Soc trop Med Hyg* 1933, 26, 525
[7] *Ibid*, 1933, 27, 326
[8] *Ibid*, 1934, 27, 343
[9] *Brit J Radiol* May, 1941 p 183
[10] Evans, R A *Trans R Soc trop Med Hyg* 1939, 32, 549

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[1] Goodkind, R P and Higgins, H L *New Engl J Med* April 24, 1941, p 722

hat the fortunate ones were diagnosed and treated early , Goodkind and Higgins shatter this notion The age of the beginning of treatment was earlier, on the whole, in those with retarded intelligence than in those who were mentally normal This can be partly explained by another of their findings—that the degree of mental defect does not correspond to the degree of thyroid deficiency as measured by the dose of thyroid needed to maintain normal metabolism Severe mental defect is likely to be noticed earlier than the insidious physical characteristics of cretinism Physical growth was found to bear a rough relation to mental development the mean I Q was higher in the eleven patients with normal physical growth than in the twelve dwarfs in the series but three of the dwarf group had I Q s above 87 and five of normal size were mentally retarded In other words, the mental defect is not due to the thyroid lack but is congenital, and probably produced by the same cause as the athyria Thus thyroid, though it may be expected to quicken the mental processes of a cretin, cannot make good the coexisting mental defect There is nothing new in this conception which indeed has long been accepted, but the inquiry has cleared the ground and established finally that congenital mental defect is not an essential part of cretinism

Another important fact emerged One patient in the series was found to be no longer a cretin at the time of the study Three years before his basal metabolism had dropped from +10 to −21% after 56 days without thyroid , at the time of the study thyroid was withdrawn for 7 months without inducing any change in his normal basal metabolism and blood-cholesterol This seems to dispose of the old saying ' Once a cretin always a cretin ''

JUGULAR COMPRESSION IN DIAGNOSIS

Coughing and straining have long been known to exaggerate motor, sensory and sphincter functions in patients with spinal cord tumours and other spinal lesions, and ventriculography sometimes leaves the patient who has internal hydrocephalus resulting from a tumour with exaggerated symptoms These effects are due, respectively, to raising and lowering the pressure above the lesion, the change in equilibrium causing local distortion and consequently fresh signs and even catastrophe These observations are the basis of the jugular-compression test, which can be performed manually, or, *with more control*, by means of a sphygmomanometer cuff about the neck Naffziger and Jones[1] used manual compression of the jugulars to differentiate spinal root pain caused by tumours (such as neoplasm or herniated intervertebral disc) from that produced by other, non mechanical, lesions Dr R B Aird addressing the American Neurological Association[2] reported on the use of compression by the cuff in a series of 100 patients with neurological disorders, throwing new light on the uses and limitations of the test The cuff can be applied with the patient either sitting or lying prone , the advantage of the prone rather than the supine position is not explained The patient is assured that the test is harmless and painless, and the pressure is then raised to 40 mm Hg and maintained at that level for 10 minutes During that time the examiner, who of course must be closely familiar with the neurological findings before the test, must examine the nervous system thoroughly, noting any new signs and any change in signs already *present* Significant changes are likely to appear late in the period of compression When the compression is released the nervous signs should be checked again , responses return quickly to their original level and Aird finds that the recovery changes are often even more convincing than those elicited during compression The test was regarded as giving a positive result when it caused exaggeration of some sign or symptom already present or produced some new sign or symptom In his 100 cases there were 45 space-occupying lesions (tumours of the brain, tumours of the spinal cord and herniations of the intervertebral discs), in 41 of these the compression test gave positive results There were 28 cases in which tumours had been suspected but disproved, and in all of these the results were negative Among 27 cases without tumours (degenerative diseases 6, convulsive states 12, post-traumatic head syndrome 8 and acute cerebral concussion 1) only one positive result was obtained, and that was in the case of acute cerebral concussion Aird warns against accepting negative results as valid on the basis of this series Only proved and disproved cases of tumour were included , in doubtful cases it may well be that signs too slight to establish a diagnosis may also be too slight to give a positive response to the test As signs become more pronounced with the progress of the disease the test may also become positive He reports 2 cases in which the test was of great service to the patient In one, a student with a cerebral tumour blocking the foramen of Monro, the jugular compression test alone established the site of the tumour—an oligodendroglioma which was successfully removed In the second case the test disposed of a diagnosis of cholecystitis and established the diagnosis of spinal tumour, and the level at which it was found The signs likely to be accentuated or produced by the test are facial paresis, asymmetry of deep reflexes, visual-field defects, abnormal reflexes, paresis, nystagmus, inequality of pupils, hypoæsthesia and aphasia Aird considers the dangers negligible, except in patients with suspected tumour of the brain-stem or posterior fossa who are always in danger from the effects of sudden strain In the discussion following Aird's paper Dr J B Ayer doubted the safety of the test also in cases of aneurysm, hæmangioma or advanced vascular degeneration Aird, however, considers that these are not contra-indications, since the change in pressure occurs only in the venous and extra-arterial spaces and is too low to approach even the lowest pressures in the arterial system As changes in intracranial pressure are universally propagated through the cranium, the test is not likely to be of value in supratentorial tumours which have not caused internal hydrocephalus, but when used with caution it may throw a little light on the exact anatomical diagnosis of brain-stem or spinal-cord lesions

THE RIGHT AMOUNT OF FLUORINE

The distribution of endemic human fluorosis is being studied closely in Great Britain[1] Badger has noted[2] that endemic fluorosis is found in at least 25 of the United States, and that clinical human fluorosis has spread beyond endemic areas, owing to the increasing use of fluorine in sprays used on agricultural pests attacking foodstuffs He thinks fluorosis is becoming a problem not only for the dentist and public-health worker but for the general practitioner and the pædiatrician A further study of domestic water and dental caries has been made by Dean and his colleagues[3] on 2832 children between the ages of 12 and 14 in eight communities in the suburbs of Chicago , this showed the usual low rate of dental caries associated with the use of fluoride waters The fluorine content in such waters was low, approaching only the minimum threshold for mottled enamel , at such levels stained teeth as an æsthetic problem did not arise There is no cure for dental mottling due to fluorosis, since the enamel-forming cells cease to function when calcification is complete Prevention must depend largely on an altered water-supply

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[1] Naffziger H C and Jones O W *Arch Neurol Psychiat* 1935, 33 941

[2] Aird, R. B *Ibid*, *April*, p 633

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[1] Wilson, D C *Lancet* Feb 15 1941, p 211 see also p 216

[2] Badger, D C Supplement to the Practitioner's Library of Medicine and Surgery London, 1940 chap 28

[3] Dean, H T Jay, P Arnold, F A and Elvove, E *Publ Hlth Rep Wash* 56, 761

In an endemic area local wells may contain much fluorine while water from lakes and rivers is often free The fluorine content of a water supply can be diluted until it lies below the minimum level for mottling (1 part per million of fluorine) Distilled or cistern waters are free from fluorine, and it can also be filtered out cheaply and effectively through calcined bones Observers in various parts of the world have noted the apatite in igneous rocks as a source of fluorine, but the fluorine inquiry[4] undertaken in the United Kingdom by the Geological Survey (as part of a war-time study of underground sources of water) is probably the first attempt to determine the source of fluorine in sedimentary rocks with a view to preventing fluorosis Attention has hitherto been largely centred on the toxic manifestations which follow excessive absorption of fluorine But the optimum intake, which is possibly more important, has not yet been determined There seems to be no doubt that fluorine protects against dental caries, Dean and others in America[5] and Wilson[6] in England have shown that in areas where fluorine is known to be present in the rocks the inhabitants show a relative immunity to dental caries apart from the presence of mottled enamel Bromehead[4] has described apatite as one of the chief accessory minerals composing the Island of Lewis, where the excellence of children's teeth has been reported by King[7] Adequate amounts of fluorine may thus be valuable in the diet of growing children, but nobody knows how much they are getting now The distribution of fluorine in English foodstuffs has not yet been studied by modern methods—we do not even know the distribution of fluorine in different parts of grain, an important point in view of the demineralisation produced by the higher grades of milling

TRICHINIASIS IN ANIMALS AND MAN

ALTHOUGH trichiniasis is not uncommon in the United States and in Germany and Poland, there have been very few recorded cases or outbreaks in Great Britain Since the end of last year, however, over 200 cases have been reported, with epidemic incidence in Wolverhampton and district, around Penrith and in Birmingham Dr Paul B Beeson, of Harvard, speaking at the Royal Society of Medicine on May 23, said that many animals, including the cat, dog and pig are naturally susceptible to trichiniasis In America, trichiniasis in the pig has been as high as 5% in large cities where the pigs are fed on unboiled garbage and swill Boiling the garbage, which has been a legal obligation in this country only since 1932, largely prevents pig trichiniasis Infestation of rats is endemic in certain parts of this country—Professor Leiper said later that 25% of London rats are infested—and pigs are probably occasionally infected from eating rat-carcases, but more commonly from eating raw scraps of infested pork Infection is not transmitted by fæces Infection of man from pork can be prevented by heating the meat at 60° C, by refrigeration at -15° C for 20 days or by brine-curing, refrigeration at 0° C must be continued for several months to be effective After they have penetrated the intestinal wall of a human host the growing trichinella larvæ become arrested in the muscle capillaries and encyst themselves, they may survive for 15–20 years in skeletal muscle The classical clinical features are fever, œdema of the eyes, muscle-pains and eosinophilia, but in Dr Beeson's view the syndrome probably indicates an uncommon and severe form of the infection, there must be many mild and latent infections which could be detected either by a differential blood count or by the more specific immunological tests Of these the skin-test is most easily applicable Working with Colonel Cecil Maddock of the Ministry of Health, he has made a recent survey in which 101 known contacts of trichiniasis cases were skin-tested 12 gave positive reactions Of these, 9 gave a history of a recent mild influenza-like attack with fatigue, malaise and aches in the limbs This finding, together with the American records which show that only 600 clinical cases are reported annually although autopsy surveys give incidences varying from 3 to 27%, proves that patients with the classical syndrome constitute only a small fraction of those affected The clinical manifestations of infection in a community will depend partly on the size of the infecting dose, which, since the worm cannot go on reproducing itself in the same host, is limited by the number of larvæ ingested They also depend on the susceptibility of the population, there is a natural resistance to infection, so that of 6 men eating infected pork, 1 will develop the classical syndrome, 1 will have a mild attack like influenza, and 4 will become latently infected But if there is no acquired resistance from previous latent or clinical infection—and one attack usually confers immunity—a susceptible population suddenly exposed to the risk of infection will produce a high incidence of clinical cases The recent epidemics in this country can be explained in several ways owing to war time restrictions the older sows (which are much more likely to have been infected from eating rat carcases because greater age means greater opportunity have been killed to make sausages, then, a smaller percentage of meat in the sausage has meant more infected sausages, and finally the sausages have been eaten, either raw or insufficiently cooked, by a highly susceptible population

Prof R T Leiper, who has been organising research into the agricultural side of the problem, told the meeting that in Wolverhampton 2 out of 149 rats examined were infected, in Penrith 9 out of 194 and in Pembrokeshire none out of 19 Infection has also been demonstrated in the cat, and incidence in cats may prove to be a good indicator of endemic infection among rats German statistics show about 2% of trichiniasis among pigs sows being more commonly affected than hogs (Dr Beeson remarked that American figures did not show any sex predilection in man) Miss M Young had examined the diaphragms of over 4000 pigs from suspected areas with negative results, but in 47 human autopsies recent or long-standing infections had been found in 6, these cases came from the Wolverhampton or Birmingham districts Studies in other areas are being arranged Miss Phyllis Clapham thought it unwise to regard a 7-day incubation period in man as being constant because of the different rate of development of larvæ in different hosts Mr J W G Leiper described the high but transient eosinophilia which follows experimental infection in the pig, and Mr W P Rogers mentioned the increased creatinine excretion in infested animals which might have practical applications

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Prof J A RYLE has been appointed consultant adviser in medicine to the Minister of Health for the Emergency Hospital and Medical Services Dr N M GOODMAN and Dr V D ALLISON, medical officers of the Ministry of Health, have been appointed deputy senior medical officers

Mr R H P ORDE, who died on Saturday last, at the age of 74, was a doughty champion of the voluntary hospital principle Soundly trained in hospital management in London and Newcastle on-Tyne, he learned, with Sir Napier Burnett, the elements of a wider cooperation under the Red Cross, and was Lord Sankey's right hand in setting up a voluntary hospitals commission Without the central bureau which he founded and directed, the voluntary hospitals of this country might have continued to plough lonely furrows until it wa [illegible] late to combine

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[4] Bromehead, C N *Lancet*, May 24, p 673
[5] Dean, Jay Arnold, McClure, F J and Elvove, *Publ Hlth Rep Wash* 1939, 54, 862
[6] *Lancet* March 22 1941, p 375
[7] King, J D *Lancet*, 1938 2, 109, *Spec Rep Ser med Res Coun Lond* 1940, No 241

Special Articles

NATIONAL FLOUR

A SECOND MEMORANDUM

In a memorandum last summer[1] the accessory food factors committee of the Lister Institute and the Medical Research Council made the following recommendation

"Flour for the bread of the people should contain the germ of the wheat grain, as much as possible of the aleurone layer, and the finer portions of the bran Instead of flour consisting of about 70% of the wheat grain as it does at present, the percentage extracted should be at least 80–85% "

Since then the Ministry of Food has decided to make generally available to the public bread baked from flour of 85% extraction In the original memorandum the nutritional considerations on which the recommendation was based were set out A second memo issued on May 22 restates them, incorporating the results of further research and defining more exactly the character of the particular 85% extraction flour recommended

The degree of extraction was fixed at 85% in order to secure a flour which should contain

As much as possible of the B vitamins, including riboflavin and nicotinic acid, and especially of vitamin B_1, present in the whole wheat

As much protein as possible, including a high proportion of that situated in the outer layers of the grain This protein is known to possess a higher nutritive value than that contained in white flour

As little bran as possible so that there should be no risk of loss of nutritive value because of the presence of much indigestible material War time diets already contain much vegetable food with relatively large amounts of roughage, it is undesirable to increase this further

THE TWO SELECTED FLOURS

Flour of 85% extraction can in practice be obtained by two general methods (I) by rearrangement of the milling machinery to produce a flour containing 85% of the wheat, or (II) by addition to the white flour (73% extraction), obtained in the ordinary milling processes, of combinations of the other fractions of the wheat The consideration which has influenced the final selection of the flour to be adopted has been the need to obtain the best nutritive value from a loaf as little removed as possible in colour, texture and flavour from that of ordinary white bread Two flours, prepared by the methods I and II, were found to possess equal nutritive value Flour I was selected as the best for the following reasons Of all flours obtained at the same level of extraction by different methods from the same grist it had the highest vitamin B_1 content and in this respect closely approached that usually accepted for wholemeal bread. It had the lowest fibre content compared with other flours extracted at this level from the same grist Of all the breads tested baked from 85% flour, it yielded the one which resembled white bread most closely in flavour and texture The colour of the bread was pale brown and was not unattractive On technical and æsthetic grounds the loaf baked from it was considered excellent

Flour I—This straight-run flour may be defined as a flour containing 85% by weight of the clean wheat, in which is included (a) the maximum amount of the germ and of the aleurone layer and (b) the minimum of the pericarp, as shown by its low fibre content

Flour II may be defined as (a) containing 85% of the weight of the clean wheat grain, in which is included all the white flour, all the reduction roll tails, mill finish and purifier tails, and sufficient fine bran to bring the amount of the mixture up to 85% of the clean wheat, (b) containing 85% of the clean wheat and excluding 15% consisting of the bran and pollards

Analyses of samples of flours I and II are set out in the table, with those of white flour of 73% extraction and of wholemeal flour, all four materials being derived from the same grist (water content being 15%) Samples of flours I and II, obtained from the same grist were found to be similar in content of protein ash and vitamin B_1, which in both cases was over 1 I U per g (thiochrome method) The fibre content of both flours was less than 0.9% that of flour I being only about three-quarters of that of flour II The lower the fibre content the better is the flour and the more efficient is the milling

No exact evidence is as yet available regarding the keeping properties of the particular types of flour selected but from the experience gained of other brown and wholemeal flours there is little doubt that this flour of 85% extraction could be kept in good state under reasonable conditions of storage for 4–6 weeks or longer

Flour	Fibre (%)	Ash (%)	(Protein %)	Vitamin B_1 (I U per g) (thiochrome method)	Calcium (mg per 100 g)	Phosphorus (mg per 100 g) Total	Phosphorus (mg per 100 g) As phytic acid
I (85%)	0.6	0.9	11.4	1.2	27	203	123
II (85%)	0.85	0.94	11.5	1.15	27	211	128
White (73%)	0–0.2	0.46	10.6	0.35	15	101	95
Wholemeal (100%)	1.8	1.51	11.9	1.4	36	343	246

Recommendation 1—The accessory food factors committee, at its meeting on Jan 23 1941 recommended that a flour of 85% extraction (similar to flour I) should be adopted Since modification of ordinary milling machinery would be required for production of flour I and this would take time it was further recommended that a flour of 85% extraction (similar to flour II) should be adopted in the meantime, because this could be produced without delay The flour should not contain less than 1 I U vitamin B_1 per g and the fibre should be less than 0.9% (assuming a water content of 15%)

CALCIUM AND IRON

It is known that the intake of calcium salts in the diets of this country, especially among the poorer classes, is often below the minimum accepted by nutrition experts as necessary for satisfactory growth of bones and teeth in growing children and for maintenance of the bones in adults The addition of calcium salts to bread was recommended in the previous memo issued by the M R C It is now possible to add details concerning the amounts required

Wholemeal bread and bread made from flour of 85% extraction contain more calcium than white bread and also more phosphorus A large proportion of the phosphorus, however, is present in a combination (phytic acid) in which it is not directly available to the organism and at the same time diminishes the availability of the calcium present in the bread and in the rest of the diet Recent tests made on human subjects for the M R C have shown that to maintain a sufficient supply of calcium salts for health more calcium salts must be added to the diet The most convenient way to do this is to add calcium carbonate to the wheat flour used for bread As a result of the test on human subjects who consumed about half of their total calorie intake as bread with only small amounts of milk and very little cheese it has been calculated that additions are needed of 65 mg calcium per 100 g white flour (7 oz of $CaCO_3$ as creta præparata B P per 280 lb sack) and of 130 mg calcium per 100 g flour of 85% extraction (14 oz $CaCO_3$ per sack) In the case of the 85% extraction flour the extra 7 oz per sack is required to neutralise the effect of the extra phytic acid contained in flour of this degree of extraction The addition of the recommended amounts of calcium carbonate to flour has no effect on the vitamin-B_1 content of the flour or on its baking properties

It has long been a practice in baking to add similar amounts of substances known as "improvers" (e g acid calcium phosphate 12 oz per sack, or up to 4½ lb per sack in certain self-raising flours) The addition of improvers to bread baked from flour of high extraction facilitates the work of the baker and results in a more attractive loaf Such evidence as is available does not justify at this stage the prohibition of their use in the baking industry, and the question has, therefore, been left open

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[1] See *Lancet*, 1940, 2, 143

The desirability of adding iron in some form to flour has been considered, the reason being that anæmia due to insufficient iron in the diet is common in this country and could easily and cheaply be prevented by the administration of simple ferrous salts A study of the available data on this subject has, however, led to the conclusion that the presence of added iron salts in flour might cause destruction of some of the other nutrients present It is, therefore, not recommended that any such additions be made until further knowledge is available

Recommendation 2 —It is recommended that calcium carbonate (as creta præparata B P) should be added to the wheat flour from which white bread is made in the proportions of 7 oz per sack (280 lb) of white flour and 14 oz per sack of 85% extraction flour

SCOTLAND

THORACIC SURGERY

Mr Bruce Dick, F R C S , in his Honyman Gillespie lecture on the surgical aspects of diseases of the chest, said that, apart from the surgical treatment of acute empyema, surgery could be employed in four types of diseases of the chest chronic empyema, neoplasm, pulmonary tuberculosis and chronic bronchiectasis Exact topographical diagnosis was always essential and this called for expert radiology Anteroposterior and profile films might sometimes be sufficient but lipiodol was often needed to define the extent of bronchiectatic cavities Tomographic films were now being used to outline the position and size of cavities, especially in pulmonary tuberculosis The bronchoscope was particularly valuable in the diagnosis of malignant disease , indeed it was the only method allowing accurate diagnosis in the early stage when surgery could be expected to be successful He pointed out that chronic empyema might result either from untreated acute empyema or from an acute empyema which had been inadequately drained , the commonest cause was withdrawal of the drainage-tube before the pleura had been completely cleansed and the infection eradicated He was finding insufflation of sulphonamide powder valuable in clearing up such infection Chronic empyemas must be thoroughly drained by rib resection at the lower fornix of the cavity, and subsequently treated by breathing exercises Plastic operations might be required when a stiff-walled cavity would not collapse, but such operations must not be carried out when infection persisted because of the danger of cellulitis For bronchiectasis, postural drainage and if necessary drainage through a bronchoscope must always be given a long preliminary trial in order to reduce the amount of sputum and improve the general state , but radical excision was the only means of obtaining cure The operative mortality had shown recently a great fall especially in children Preliminary lipiodol examination of both sides was needed before lobectomy was carried out , at operation adhesions were troublesome and the chief complication was empyema Simple intrathoracic tumours, dermoids and teratomata, were as a rule readily removed , they had to be distinguished from aneurysms and from malignant tumours which showed smooth outline in the radiogram Pneumothorax and thoracoscopy might be useful in diagnosis Early diagnosis of carcinoma of the lung was all-important , all cases of hæmoptysis in adults should be investigated with as much care as cases of hæmaturia , the bronchoscope was especially useful here So far the number of cures was not high, largely on account of late diagnosis

The efficacy of collapse therapy in pulmonary tuberculosis was generally admitted, he said He described extrapleural pneumothorax which collapses the lung even when the pleural cavity is obliterated by adhesions , intrapleural division of adhesions which may turn an incomplete artificial pneumothorax into a satisfactory one, and which can be done with very little risk , phrenicectomy which is often used when a cavernous lesion is situated in the central and lower parts of the lungs , direct cavity drainage, a new method giving promising results in which cavities are drained and collapsed by direct suction through the chest wall, and thoracoplasty, used for chronic types of disease i which the simpler procedures had failed, the operatio being usually carried out in stages, with the removal o anything from four to ten ribs

ADULT CRIPPLES

Prof L S P Davidson addressing the annual meetin of the Edinburgh Cripple and Invalid Children's A Society reminded his hearers that there were more adul crippled than children Four years ago, he said, a investigation had been carried out in the north east o Scotland to compute the number of people sufferi from rheumatic diseases Assuming that the incidenc of rheumatism in the rest of Scotland was equivalent t that in the region studied then 300,000 people went t their doctors every year for treatment of rheumatism o one kind or another, and 50,000–60,000 people in Sco land were so completely crippled that they were unab to work for 60 days in every year The loss of efficienc the loss of wages, the misery and pain suffered were s great that it was time that the nation took cognisanc of the facts and provided efficient treatment for them We knew a good deal about the causes of rheumatis and we knew that the treatment of chronic rheumat diseases was not to be found in a bottle of medicine bu depended on skilled medical personnel who had bee specially trained for this job The Empire Rheumatis Council had accepted his finding that there were no available in this country the means for treatment of mor than 10% of the persons suffering from these diseases

In England Now

A Running Commentary by Peripatetic Correspondents

I HAD just emerged from a farmhouse in the countr south of the city, and was thrusting my obstetric forcep into my hip pocket, when I was startled by loud bac firing from an engine Looking up I saw an aeroplan flying low, and circling around as though the pil intended to make a landing "By the holy smoke!" I exclaimed, "It's a Nazi!" While trying to make u my mind which way to run, I saw a splash of whi *appear in the sky, and thereafter my attention* was abou equally divided between the plane, now obviously ou of control and crashing to earth, and the figure of th pilot, suspended by his parachute, floating graceful from the sky The breeze was carrying him towards m and in a flash I realised my awful predicament Her was I about to face the Nazi hordes—or one of them, a any rate—in a state of physical exhaustion after delive ing the farmer's wife I remember thinking Ho like the Nazis, always catching their opponents off the *guard and at a serious disadvantage!* Clearly somethin had to be done I ran back into the house, changed int the boots which I had just taken off (I always keep i my obstetric bag a pair of mountaineering boots wit spikes in the soles), and snatching a pitchfork from corner of the kitchen rushed out to do battle with th enemy Not much of a weapon, I thought, but I'll tr to pierce both pleural sacs at once The parachut was just disappearing behind the house, so I raced dow the garden path, scrambled through a privet hedge, an there I saw the scoundrel thirty yards away rolling ove on the ground I ran up to him, panting for breath, bu managed to splutter, "Who are you?" I don't kno what I expected him to say, but his reply took my breat away—or what was left of it "I'm a German airma and a gentleman," he said haughtily By this time h had managed to assume a sitting posture, thus achievin some semblance of dignity I was much impressed b his fine physique, and from the ugly scar on his forehea I knew at once that he must be a bonny fighter I wa relieved to observe that he showed no inclination to b truculent, and I felt increasingly embarrassed by m pitchfork However, this problem solved itself moment later, for the wind blew the parachute cord around my legs, and hopelessly entangled I fell in a hea in the grass Mercifully the pitchfork dropped well ou of the reach of either of us But as I landed squarel on my tuber ischii I let out a yell of pain "It's those—

orceps!" I howled, withdrawing the battered instruments rom my hip pocket, while the German looked at me in onsternation. "I see no blood" he remarked, leaning over to examine the forceps. "I was speaking idiomatically," I explained loftily, "you would not understand." "I know," he suddenly exclaimed, beaming, "you are a doctor!" I nodded assent, ruefully massaging my right buttock. "That is good," he said, "can you tell me how far I am from the Royal Faculty of Physicians and Surgeons of Glasgow?" 'What on earth do you want with the Faculty?" I asked in astonishment. "Listen," he said abruptly, 'I explain. I am tired of the Nazis. I am a refugee. Soon after the war started I decided to be a doctor. Therefore I come to Glasgow to take the Triple Qualification. That is the best medical qualification in the world, is it not so? In Germany it is simply called the T.Q. Already I have my first examination passed, including the materia medica, and I know the Pharmacopœia Britannica." For a while I was speechless. Then I decided to test the truth of what he said by quizzing him. "What is the dose of hydrarg cum cret?" I asked. "Grains 1 to 5" came the prompt reply. "Well," I said half apologetically, "it's not a long step from hydrarg cum cret to Hitler cum Crete; tell me, what is going to be the next move in the eastern Mediterranean?" "The next German offensive will begin on ——." Here our conversation was rudely interrupted by members of the Home Guard who seemed to have popped up out of the soil. The airman shook his head to indicate that our conversation was at an end. He had injured his ankle and we helped him to walk to the farmhouse.

I was looking forward to the broadcast that followed a few days later, but in the middle of the news bulletin I was called to the surgery to deal with a fool of a boy who had inhaled a marble. When I returned to the drawing-room I found my wife almost helpless with laughter. "Was it as funny as all that?" I inquired, rather nettled by this reaction to what must surely have been one of the most remarkable incidents of the war. "Darling," she replied, "I've told you scores of times that you really must get a new suit and a new hat. Of course, I should have recognised your voice *anywhere*, but the B.B.C. actually described you as a ploughman!"

* * *

Examining in war-time, if an agreeable interlude, is not without its anxieties. What is to happen in the event—never to be disregarded in these days—of a package of answer-books being bombed beyond recognition? Replacement would be impossible and no records would be available. Presumably we should shrug our shoulders and credit the candidates with an all round capability based on such impressions as the unwritten parts of the examination provided, which, judging by the average performance on paper, would operate in favour of most examinees. Then, the decentralisation of patients means the conduct of clinical examinations at varying distances into the country, and the uncertainty of travelling encourages a nightmare of apprehension, the possibility of agitated, hungry, and anxious candidates awaiting the arrival of their arch-tormentor immobilised many miles away. But after some gratuitous worry over things which never happen, it all comes right in the end, and one has a peculiar satisfaction at having carried on, at having refused to allow cataclysmal disturbances to interfere with routine procedures. We expect to be asked "Has the standard deteriorated?" This would be natural from the restriction of clinical material and of teaching opportunities, not to mention the handicap of working in the midst of distractions and difficulties. It is not easy to answer, since the examiners' standard of expectation is probably lowered through an impulse to compassionate—even benevolent—consideration. I think we may find long pass-lists throughout the war.

In moments of self-congratulation or self-commiseration, the medical practitioner will sometimes feel overawed in reflecting on his privileges and responsibilities. He may not bear the shears of destiny nor hold commandment o'er the pulse of life, but there are occasions when his knowledge and skill just make the difference in these important activities. So, too, must the examiner in final subjects feel when taking stock of his privilege and responsibility in launching young mariners. How to be just, yet not too exacting? How to conduct a procedure which shall safeguard the public and at the same time oppose no unreasonable obstacle to prospective guardians of their safety? Knowledge we can assess—or at least the candidate's demonstration of his knowledge. Capacity we can only deduce—or guess. Admittedly there is no method which is an absolute criterion. Everybody knows examples of the brilliant examinee who proves eventually to be useless and unpractical, and of the chronic failure whose subsequent success is a certificate of his possession of qualities which make him a good doctor. No doubt some method could be devised to test such qualities in embryo, but so far none has, and although it is easy to tilt at the examination system and to suggest plausible alternatives, we all arrive eventually at the conclusion that notwithstanding its faults there is nothing better.

I suppose the viva-voce is the portion of the examination which is anticipated with the greatest apprehension, yet it operates far more in the candidate's favour than he generally supposes. If he is a border-line case he will be afforded the maximum opportunity to show his acquaintance with fundamentals, unless he is smitten with a sort of mental paralysis with which it is impossible for the most indulgent examiner, with all the will in the world, to contend. Such a candidate must occasionally be astonished at the type of question fired at him with the intention of estimating his character and general suitability when there has been some dubiety as to the soundness of his academic lore. Hitherto it had not perhaps struck him that a great deal can be ascertained from an inspection of the nails or that there were so many extra-abdominal causes for belly-ache. The candidate who will pass even if he failed to score a single mark in his viva is complimented by questions which give him the opportunity to qualify for honours—on such topics as the genesis of gallop rhythm or the occurrence of an Argyll Robertson pupil in conditions other than tabes.

I think that with most examiners at the present day the quality of mercy is not strained. It is sometimes maintained that a demonstration of ineptitude under ordeal should justify prejudice in disfavour; for if a man cannot rise to the occasion in his own interests, is he not likely to be found wanting when the interests of others are concerned? A specious argument, but the contrary might quite well be advanced by a skilled advocate, and anyhow I have never seen an examiner who supported the former view carrying his principle into practice.

The male we accept as the progressive sex in evolution, woman as more conservative with less likelihood to exhibit extremes; and it is not surprising that although most women do better in examinations, rarely if ever do we encounter a woman better than the best man nor one who is worse than the worst. And although all my colleagues are not in agreement, it is my firm conviction that the girls are far less nervous than their male contemporaries under interrogation. An obvious explanation is that their confidence and assurance is founded on the ability to exploit their sex. Save on those rare occasions of encountering misogynists or cranks opposed on principle to women in medicine, they can rely on the chivalry traditionally accorded to "the weaker sex," and more than chivalry when their charms so demand. Or is there after all some secondary sex advantage, so to speak, or special form of courage? Whatever the explanation, I have been repeatedly struck by the almost preposterous dithering of some stalwart young man contrasted with the coolness and self-possession of the maiden.

* * *

I was attending a middle-aged charlady—one of George Belcher's thin type with a pinched face, a red nose and a permanent dew-drop and sniffle. She was in bed and had some tummy pains. She improved but refused to admit it. One day I said to her "For goodness' sake, Mrs. Pank, pull yourself together; you know you are not nearly as ill as you think you are." She looked up at me mournfully and said, "Everything I eats, doctor, turns to gas, and oh Lor' it do frighten me so. My pore mother *died* of gastritis."

justify it this stage the prohibition of their use in the baking industry, and the question has, therefore, been left open

The desirability of adding iron in some form to flour has been considered, the reason being that anæmia due to insufficient iron in the diet is common in this country and could easily and cheaply be prevented by the administration of simple ferrous salts A study of the available data on this subject has, however, led to the conclusion that the presence of added iron salts in flour might cause destruction of some of the other nutrients present *It is, therefore, not recommended that any* such additions be made until further knowledge is available

Recommendation 2 —It is recommended that calcium *carbonate (as creta præparata B P) should be added to* the wheat flour from which white bread is made in the proportions of 7 oz per sack (280 lb) of white flour and 14 oz per sack of 85% extraction flour

SCOTLAND

THORACIC SURGERY

Mr Bruce Dick, F R C S , in his Honyman Gillespie lecture on the surgical aspects of diseases of the chest, said that, apart from the surgical treatment of acute empyema, surgery could be employed in four types of diseases of the chest chronic empyema, neoplasm, pulmonary tuberculosis and chronic bronchiectasis Exact topographical diagnosis was always essential and this called for expert radiology Anteroposterior and profile films might sometimes be sufficient but lipiodol was often needed to define the extent of bronchiectatic cavities Tomographic films were now being used to outline the position and size of cavities, especially in pulmonary tuberculosis The bronchoscope was particularly valuable in the diagnosis of malignant disease , indeed it was the only method allowing accurate diagnosis in the early stage when surgery could be expected to be successful He pointed out that chronic empyema might result either from untreated acute empyema or from an acute empyema which had been inadequately drained , the commonest cause was withdrawal of the drainage-tube before the pleura had been completely cleansed and the infection eradicated He was finding insufflation of sulphonamide powder valuable in clearing up such infection Chronic empyemas must be thoroughly drained by rib resection at the lower fornix of the cavity, and subsequently treated by breathing exercises Plastic operations might be required when a stiff-walled cavity would not collapse, but such operations must not be carried out when infection persisted because of the danger of cellulitis For bronchiectasis, postural drainage and if necessary drainage through a bronchoscope must always be given a long preliminary trial in order to reduce the amount of sputum and improve the general state , but radical excision was the only means of obtaining cure The operative mortality had shown recently a great fall especially in children Preliminary lipiodol examination of both sides was needed before lobectomy was carried out , at operation adhesions were troublesome and the chief complication was empyema Simple intrathoracic tumours, dermoids and teratomata, were as a rule readily removed , they had to be distinguished from aneurysms and from malignant tumours which showed smooth outline in the radiogram Pneumothorax and thoracoscopy might be useful in diagnosis Early diagnosis of carcinoma of the lung was all-important , all cases of hæmoptysis in adults should be investigated with as much care as cases of hæmaturia , the bronchoscope was especially useful here So far the number of cures was not high, largely on account of late diagnosis

The efficacy of collapse therapy in pulmonary tuberculosis was generally admitted, he said He described extrapleural pneumothorax which collapses the lung even when the pleural cavity is obliterated by adhesions , intrapleural division of adhesions which *may turn* an incomplete artificial pneumothorax into a satisfactory one, and which can be done with very little risk , phrenicectomy which is often used when a cavernous lesion is situated in the central and lower parts of the lungs , direct cavity drainage, a new method promising results in which cavities are drained collapsed by direct suction through the chest wall, and thoracoplasty, used for chronic types of disease in which the simpler procedures had failed, the operation being usually carried out in stages, with the removal of anything from four to ten ribs

ADULT CRIPPLES

Prof L S P Davidson addressing the annual meeting of the Edinburgh Cripple and Invalid Children's Aid Society reminded his hearers that there were more adults crippled than children Four years ago, he said, an investigation had been carried out in the north east of Scotland to compute the number of people suffering from rheumatic diseases Assuming that the incidence of rheumatism in the rest of Scotland was equivalent to that in the region studied then 300,000 people went to their doctors every year for treatment of rheumatism of one kind or another, and 50,000–60,000 people in Scotland were so completely crippled that they were unable to work for 60 days in every year The loss of efficiency, the loss of wages, the misery and pain suffered were so *great that it was time that the nation took* cognisance of the facts and provided efficient treatment for them We knew a good deal about the causes of rheumatism and we knew that the treatment of chronic rheumatic diseases was *not to be found in a bottle of* medicine but depended on skilled medical personnel who had been specially trained for this job The Empire Rheumatism Council had accepted his finding that there were not available in this country the means for *treatment of* more than 10% of the persons suffering from these diseases

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I HAD just emerged from a farmhouse in the country south of the city, and was thrusting my obstetric forceps into my hip pocket, when I was startled by loud back firing from an engine Looking up I saw an aeroplane flying low, and circling around as though the pilot intended to make a landing "By the holy smoke!" I exclaimed, "It's a Nazi!" While trying to make up my mind which way to run, I saw a splash of white appear in the sky, and thereafter my attention was about equally divided between the plane, now obviously out of control and crashing to earth, and the figure of the pilot, suspended by his parachute, floating gracefully from the sky The breeze was carrying him towards me, and in a flash I realised my awful predicament Here was I about to face the Nazi hordes—or one of them, at any rate—in a state of physical exhaustion after delivering the farmer's wife I remember thinking How like the Nazis, always catching their opponents off their guard and at a serious disadvantage! Clearly something had to be done I ran back into the house, changed into the boots which I had just taken off (I always keep in my obstetric bag a pair of mountaineering boots with spikes in the soles), and snatching a pitchfork from a corner of the kitchen rushed out to do battle with the enemy Not much of a weapon, I thought, but I'll try to pierce both pleural sacs at once The parachute was just disappearing behind the house, so I raced down the garden path, scrambled through a privet hedge, and there I saw the scoundrel thirty yards away rolling over on the ground I ran up to him, panting for breath, but managed to splutter, "Who are you?" I don't know what I expected him to say, but his reply took my breath away—or what was left of it "I'm a German airman and a gentleman," *he said haughtily By this* time he had managed to assume a sitting posture, thus achieving some semblance of dignity I was much impressed by his fine physique, and from the ugly scar on his forehead I knew *at once* that he must be a bonny fighter I was relieved to observe that he showed no inclination to be truculent, and I felt increasingly embarrassed by my pitchfork However, this problem solved itself a moment later, for the wind blew the parachute cords around my legs, and hopelessly entangled I fell in a heap in the grass Mercifully the pitchfork dropped well out of the reach of either of us But as I landed squarely on my tuber ischii I let out a yell of pain "It's those—

and hospital practice is bound to be uncontrollable and weighted in favour of the paying patient, whatever form of contract may have been signed.

	J. B. ATKINS	A. L. FOSTER CARTER
	W. G. BIRKS	G. C. MACKAY
		C. D. NEEDHAM
	W. P. CLELAND	M. R. POLLOCK
London	J. V. DAVIES	HELEN TAYLOR

SIR,—Few will disagree with the preliminary generalisations of Drs Hunter Perry and Varey, but let us consider their later proposals in more detail. First they advocate the formation of a new and rather nebulous body "on the lines of the B.B.C." to coordinate the various activities of medicine. They do not mention the Ministry of Health, but surely this is the body whose function it is, or should be, to carry out this coordination. Why complicate matters by forming another and redundant executive body? The authors advocate regionalisation of hospital services within each region "a key hospital usually a recognised teaching hospital," but in large areas of this country no teaching hospitals exist. We see here a desire to install the teaching or voluntary hospital as the key hospital in every area, but many would now agree that the services to the community of the properly equipped and staffed municipal hospitals are greater than those of the voluntary hospitals in many areas. True, the authors do not mention the voluntary hospital by name—possibly a tacit admission of the inevitable senescence of the voluntary hospital system due chiefly to the failure of voluntary subscriptions to support them.

The subject of the chronic sick is touched on and it is suggested that "clinics on the lines of Papworth" will rehabilitate these patients. Are the authors aware that Papworth is now a great manufacturing concern and can find little or no place for the chronic sick, many of whom are bedridden? Bedside handicrafts will ameliorate the lot of these patients, but the majority cannot be made into economic members of society.

The authors next consider the terms of appointment of medical staffs to the hospitals and conclude that they should be paid, but no scale of remuneration is suggested. At the same time they state that full-time contracts produce a service which would encourage "mental staleness and inertia instead of the wider and more independent outlook." This is a matter of opinion, but all the fighting services evidently consider that whole-time employment is more effective both for its medical and combatant officers, and the same applies to an increasing extent in the public-health services. It is further stated that part-time contracts would benefit the cultural status of the profession. Why? Surely a doctor who drives a renovated Rolls-Royce is not therefore more cultured than one who has no need to spend money in this way.

Coming to hospital administration, the authors state that this should be in the hands of trained laymen, though no real reason for this statement is given. An attack on the whole race of medical superintendents now follows—they should be abolished because among other things "the establishment of such a senior resident post often tends to a cramped outlook which reacts badly on its occupant." As a medical superintendent I am admittedly biased, but I cannot see that this statement has any real meaning. Surely the wide problem—clinical, administrative and human—with which a medical superintendent has to deal will, if anything, widen his outlook. Nor need a medical superintendent be "harassed" or "ill equipped with knowledge." He is chosen for his post, for which competition is extremely keen, and the qualifications of most medical superintendents will bear comparison with the honorary staffs of voluntary hospitals and will often include the D.P.H., which gives them a wider outlook on medicine as a whole. More incorrect still is the remark that the medical superintendent tends "to become a wary political fencer who views each new advance as a potential source of complaints which must be stifled if he has to retain his job." Medical superintendents do not in fact lose their jobs for encouraging new advances, and this statement can be baldly dismissed as absurd. If these remarks are the best evidence that can be adduced against medical superintendents there is no case for their abolition, and I would go farther and say that increased lay control of our hospital services is one against which we should be more than ever on our guard. No layman can have the same grasp of the problems of the treatment of the sick as a well qualified and experienced doctor.

There is in other respects much truth in what the authors say, but the article gives a one-sided view of the future hospital service. It seeks to bolster up the voluntary hospital and the financial (and cultural!) status of its staff without taking any cognisance of the great and increasing work of the municipal hospital.

These views are my own and do not necessarily represent those of the authority I serve.

Godalming. W. SMITH.

LOCAL APPLICATION OF SULPHATHIAZOLE

SIR,—In their very interesting communication in THE LANCET of March 1, Colonel Colebrook and Major Francis described the disappearance of hæmolytic streptococci in superficial wounds after the local application of sulphanilamide. They also pointed out that group D hæmolytic streptococci were found to be resistant to this drug. In view of the observations of Helmholz and Neter, indicating greater activity of sulphathiazole than of sulphanilamide on group D hæmolytic streptococci, a patient with a severe wound infection due to this organism following an exploratory laparotomy was treated with sulphathiazole. The preparation used was that of Dr F. Meyer (sulphathiazole xylose), 4 grammes being applied locally every day. During this treatment the wound healed and hæmolytic streptococci finally disappeared. Although no conclusions can be drawn from a single case the observation suggests that sulphathiazole may be of value in the local treatment of group D hæmolytic streptococcal infections.

Buffalo, New York. ERWIN NETER.

ENDOCARDITIS LENTA

SIR,—In reply to Dr Magnus Haines's question (May 24, p. 681), I quoted Dr J. A. Capps's paper as a recent review of the subject, but would certainly not wish to depreciate the work of my friend Dr E. Libman in 1913, though possibly blood-cultures were less to be relied on at that date. By the way, my case illustrates the point that improvement in symptoms, almost amounting to temporary clinical recovery, may occur before the blood becomes sterile, whereas when the blood remains sterile and the *infection* seems to be recovered from, the damage already done is likely to be so great that real recovery from the *disease* is out of the question. Dr Haines's observations in his own cases by modern methods help to confirm those of Libman by the technique of 1913.

London, W.1. F. PARKES WEBER.

CONGENITAL PYLORIC STENOSIS

SIR,—I have read with considerable interest Dr Dobbs's article on congenital pyloric stenosis. It appears to me that there is still lack of appreciation of the distinction between simple pylorospasm and congenital hypertrophic stenosis of the pylorus. The former is amenable to medical treatment, the latter demands early surgical interference. Atropine may diminish the spasm, but it cannot cure the hypertrophic condition of the muscle which may extend to the stomach and even to the œsophagus. My contention has always been that if a tumour can be felt the diagnosis of stenosis must be made; but if no tumour is made out the case is one of simple pylorospasm. My experience, of course, may be exceptional, but I have yet to come across a case of stenosis in which there is no tumour. This, I think, explains the success of atropine in some cases and not in others. After the surgeon has performed the operation the patient should be handed over to a physician fully experienced in infant feeding, a subject with which the surgeon cannot be expected to be conversant. All this has been my teaching for years and I see no reason for departing from it.

Edinburgh. JAMES BURNET.

Letters to the Editor

THE STRANGERS WITHIN OUR GATES

SIR,—As an original member of the Academic Assistance Council (now Society for the Protection of Science and Learning), I have had continuous experience of medical refugees and wish to give as objective an account of the history and present state of the problem as I can.

In the prewar period of persecution the handling of academic refugees—persons driven from posts in universities or research institutes—became more and more difficult as tyranny invaded new regions; in the early days a great majority of them were "non-Aryan" Germans, but before the end of the peace others had increased in number so that the majority of non-Aryans was reduced. Pari passu the demands made on organisations dealing with non-academic medical persons increased. Some of the academics and almost all the non-academics could not be absorbed by research or teaching institutions. Opposition to permitting them to practise was great; so great that the statistically modest plan accepted by the B.M.A. of permitting 50 aliens selected by an imposing committee to qualify for practice after two years' study was violently attacked by another medical organisation. Those whose means of living did not depend on general practice in industrial cities were hardly in a position to condemn this attitude; it is easy to be generous at others' expense. The result was that when war came there were already many unemployed foreign medical men in this country supported by charitable contributions. The military disasters between September, 1939 and May, 1940, increased the number of refugees while nothing happened in this country greatly to increase the demand for medical personnel in civil life. The disasters of the summer created a general demand for the internment of aliens and a large number were interned. That cruel individual hardships were inflicted and many blunders made is probable. Those not charged with executive responsibility in a nightmare scene may well criticise these errors with moderation. Then the air attacks began in earnest. By the end of February, 1941, 58,576 civilians had been killed or wounded while synchronously increasing numbers of civilian practitioners had been drafted into the fighting services. At or about this time the Ministry of Health decided that use might be made of aliens, the Medical Register (Temporary Registration) Order in Council was made, and local authorities were notified that they *might* employ approved aliens. I am informed that, when the order came into force, the approximate number of unemployed and potentially employable aliens was between 1300 and 1400; about 750 were Austrians, Germans and Italians, 350 Poles, 250 Czechs and there were a few French and Norwegians. Of this number 61 were actually employed at the end of last month.

The process of selection is elaborate. In the first place, applicants must be approved as prima facie eligible for professional employment by the B.M.A. Next, those so approved must be approved by the public-security departments of the Government. Then some or all of those who have surmounted the first two hedges must be selected for work by an authority, local or central. Lastly the persons so selected must be registered in the special list by the G.M.C. At the end of April, 251 had passed stage 1, 170 stage 2, 100 stage 3 and 61 stage 4. So 4.4% of the potentially available were actually in use and 17.9% had been passed as fit by a professional tribunal.

That more than a thousand professionally competent persons have been unemployed for many months, and, at the April rate of progress, are likely to be unemployed for many more months is an arithmetical statement which prima facie speaks ill for our humanity and administrative efficiency. But, as a veteran statistician, I distrust prima facie inferences. Quite apart from existing rules and regulations, there is much medical work for which, in my opinion, European aliens are unsuited. It may perhaps be mere arrogance, but I honestly think that I am a better "doctor" for a "sick bay" admitting bombed-out East-enders too ill to be billeted, than an alien of half my age and ten times my professional competence. I still remember enough of what I learned as assistant to my father in the East End early in the century to know when a patient is so sick as to need professional skill than I have, and I can help to cheer men and women of my own flesh and blood and my age, better than a young foreigner. These spiritual duties of our profession cannot, I think, generally be performed by aliens. But in public institutions, in pukka hospitals even in the fighting services, where those in control must always be British, the technical knowledge and skill of young aliens can surely be used. I do not know what proportion of the unused 1200 have this technical skill nor even what *proportion of the* whole have made application to the B.M.A. I do not even know what data were supplied to the person or persons appointed by the B.M.A. to test applicants. The practice of the Society for the Protection of Science and Learning was to submit applications received to an expert committee, at least three members of which were clinicians, and in these cases full dossiers would be available. But our cases would be a minority. I think other organisations helping aliens followed the same practice. I therefore do not know whether the delay at the first fence is reasonable or not, but it is a matter for discussion in a professional journal. Whether the delay at fence no. 2 is reasonable is not a professional question at all. Finally there is the question whether those in control of institutions where professional services might be rendered do in fact seek to employ competent aliens. Because we keep silence over difficulties, it does not follow there are none. We are fighting against racial tyranny, but we are human beings and have racial prejudices of our own. Do these hinder efficiency?

Perhaps to many of your readers I shall seem to have occupied much space discussing a minor matter. The intellectual sterilisation of even 1200 refugees is not a large item in the sum total of war-time misery. But part of a duty which would seem to rest on the National Government has, as it appears, been delegated to a voluntary professional organisation. Is this improvisation working well or ill? That is, I think, an important question because in the grim years before us other medical problems not less difficult to solve will emerge.

Loughton MAJOR GREENWOOD

POSTWAR HOSPITAL SERVICES

SIR,—The timely article by Drs Hunter, Perry and Vaizey in your issue of May 17 deserves the widest support. When the signatories of this letter were residents together at a London voluntary hospital we spent much time in discussing these problems because we felt that if the medical profession as a whole did not take an active interest in its own future, there was a grave danger that the recommendations of some unrepresentative body, such as the B.M.A., might be adopted by the Government. Our discussions culminated in the production of a written plan which closely resembled that of Hunter, Perry and Vaizey. We differed from them, however, in recommending a whole-time national medical service as opposed to a system of part-time contracts.

Since the time of Hippocrates, the avowed aim of the medical profession has been to make the benefits of medicine equally available to all. When private practice is examined in the light of this aim the question arises: what does the paying patient obtain for his money? Does he procure essential benefits which are denied to the non-paying patient? If so, we are falling far short of our aim. If he does not obtain any additional benefits it is unfair that he should be made to pay for that which another can obtain free. It may be argued that the patient pays for the privilege of a private consultation, but if such consultations are necessary or beneficial they should be available to everyone. This has been recognised at some hospitals where the patients are seen by appointment. Again, it may be said that private practice allows the patient a free choice of doctor, but provision for such choice would form a part of any national medical service. It is also argued that the organisers of such a service would be bureaucrats, and that the medical profession would become a branch of the Civil Service. But this is a matter of organisation, and with the disadvantages of Civil Service medicine always before us, it should be possible to evolve a system free from the worst defects of bureaucracy. Under present conditions, the balance between private practice

THE SWEDISH HOSPITAL

CASUALTY ORGANISATION BY THE HOME GUARD

SIR,—The problem of dealing with casualties in case of invasion cannot be met by the arrangements which have hitherto proved adequate for air-raids Any steps now taken must depend on cooperation between three services—the Army, the Home Guard and the local authorities I do not include the Emergency Medical Service because this is a hospital service and I am considering only the primary treatment of casualties until they can be removed by ambulance Cooperation depends on each party knowing what the other is able to do It may be useful to set out what is being done by the Home Guard in one zone, since our service has developed on the only lines which circumstances allowed, and other areas may need to adopt similar plans

We may have to face complete severance of normal communications by road and telephone, for a period varying with the persistence of enemy attack This is a possibility which the lay mind does not easily grasp—thus, the A R P services are still content to rely on the collection and removal of casualties by motor ambulance Severance of communications will not affect all areas at the same time, but we must make our preparations in all alike We must be prepared to collect our own casualties on stretchers, improvised or otherwise, and carry them by hand to places at which they can be looked after for three or four days, perhaps more Since our stretcher-bearers are fighting men first and stretcher-bearers only when circumstances permit, these places have to be close to every point at which casualties might occur We have aimed at setting up at least one casualty collecting post (C C P) in every square mile of the county It would be a waste of energy to set up these posts where similar posts under the control of some other authority already exist We have therefore plotted all such posts on a map and then tried to fill up the unoccupied miles Such posts fall into three main groups

1 Regular military posts Some of these are fixed posts, some are theoretically mobile but are so likely to remain fixed during invasion that it has not seemed worth while to duplicate them Others are frankly mobile and we cannot be sure that they would be there when needed , these we have had to disregard The military authorities will certainly give every help in their power

2 A R P posts and points Most first aid posts could retain casualties for two or three days if necessary, but the "points" are different , most of them consist of a box of dressings costing 15*s* and of nothing else A few have been built up by local endeavour to the status of small hospitals The exact facts must be ascertained in each case before they are put on the map

3 Public assistance institutions, isolation and smallpox hospitals, children's homes, sick-bays and so forth have both dressings and accommodation which could be used in emergency These go on the map

The problem of filling up the vacant miles resolves itself into visiting suitable private houses, inns, works, and so on, and persuading those in charge to be ready to take casualties if called upon They are usually very willing to do so The C C P s must be provided with dressings and medical attendance Local general practitioners, retired practitioners, married women practitioners and dental surgeons with medical degrees can often accept responsibility for a small number of posts in their vicinity If this is not possible, the village nurse may be able to help, or any other nurse likely to be available in emergency V A D and St John helpers are usually already attached to some A R P post or point The use that can be made of them depends on the local A R P controller, who is often, alas, rather difficult to convince of the need for real cooperation Dressings are at present unobtainable except by voluntary endeavour Some units have collected funds for the purpose and have quite a good supply, others must depend on the official supply, which was apparently intended for some other need than that which we have actually to face It consists of first-aid gauze dressings and a few rather unsatisfactory wooden splints It is to be hoped that it will presently be augmented

Staffing is by one senior medical officer, some group M O s, where circumstances make this convenient, one M O per battalion, and as many company M O s as we can enrol They have all been promised that they will in no case be required to undertake either whole time service or any other service which would conflict with civilian obligations Their help is given subject to the approval of the local medical war committee which has to be satisfied that their employment by the Home Guard will not unduly interfere with civilian services Some committees tend to dictate the exact terms of employment and even the rank which such officers should have, but it does not appear that they are entitled to do so

The duties of the Home Guard medical officer have thus proved, rather surprisingly, to be purely administrative and to include no medical treatment whatever It is true that many of them will attend at C C P s in their civilian capacities, and will there treat as many civilians as Home Guards But the Home Guard medical service, as such, does not guarantee to do more than arrange to the best of its ability that no Home Guard shall go without the best care possible in case of emergency The essence of the C C P system is a network of one-mile mesh all over the country and its efficiency will depend on making sure that everyone in the neighbourhood knows where help can be found in emergency

A leaflet has been prepared for distribution to those who agree to organise Home Guard C C P s This, after setting out the problem, asks them to be ready, when the church bells ring, to set up a sort of temporary rest hospital for six or eight wounded Nothing very complicated can be aimed at, but it ought to be possible to provide for the wounded (*a*) protection from the weather , (*b*) warmth , (*c*) rest, if possible, on beds, palliasses or cushions , (*d*) simple cooking, such as the provision of soups, bread and butter, &c , and (*e*) such skilled care as may be possible—in some cases a doctor will be available, in others a trained nurse of V A D, in others simple home nursing

GORDON WARD

EPILEPSY AND AIR-RAIDS

SIR,—In view of the articles by Drs Tylor Fox and Shafar in your issue of May 17, the following patient, whom I saw on May 21, seems of interest

A woman of 43 gave a history of major and minor epilepsy starting at the age of 7 This had been treated with bromide and Luminal until 5 years ago when the fits ceased and she stopped treatment In October, 1940, she was outside the house when her husband was killed at her side by a bomb and she herself was wounded in the legs She was not concussed, and was still standing holding on to a railing after the explosion She was assisted to a first aid post and taken into a hospital , while there the minor attacks recurred and she was given luminal After her discharge she had a major fit in January, 1941, and since then she has had 5–6 major and 2–3 minor fits The last major fit was observed by a nurse, who described to me a typical major epileptic attack with incontinence Hysteria may therefore be excluded On examination she showed no abnormal neurological signs

Of course in this case there may have been some slight mechanical damage to the brain from blast, but it is possible that the emotional shock may also be involved

London N G HULBERT

PAROXYSMAL HÆMOGLOBINURIA

SIR,—May I correct an error in your leading article of May 24 In the patients with paroxysmal nocturnal hæmoglobinuria it is increased *acidity* of the blood which increases the hæmolysis, possibly through increased alkali excretion during sleep Similar results have been reported by T H Ham (*Arch intern Med* 1939, 64, 1271) and by G C Ham and H M Horack (*Ibid*, 1941, 67, 735)

Royal Infirmary, Manchester M C G ISRAËLS

GENTIFLEX (Allen & Hanburys) is a gentian-violet jelly for application to burns, as an alternative treatment to tannic acid It contains 2% gentian violet with phenyl mercuric nitrate 1–3000, and is packed in tubes containing 1¼ oz and 5 oz

Oliver was promoted surgeon lieut-commander in 1937 and joined H M S *Bonaventure* as senior medical officer in 1940 He leaves a widow and two children

ALEXANDER ARTHUR SUTTON

C B, D S O, L R C P E, MAJOR-GENERAL R A M C RETD

Major-General A A Sutton, who died at Tunbridge Wells on April 12 in his eightieth year, took the Scottish conjoint in 1884 and received his commission as surgeon the following year He was promoted surgeon major in 1897, and the next year took part in the protectorate expedition in Sierra Leone, where he was severely wounded He saw further service in South Africa, where he was again wounded at Paardeberg, and he was mentioned in dispatches and received the D S O At the outbreak of the last war he was in command of the R A M C at Aldershot depot, and a colleague has described how he worked unceasingly for the welfare of the men of Kitchener's army many of whom had to be accommodated at short notice, and how he often stayed with them until the early hours of the morning until he saw them comfortably bedded In 1915 he was appointed D D M S in Macedonia, and during his time there he was twice mentioned in dispatches, created C B and awarded the order of St Sava He returned home to command the R A M C depot at Blackpool, and it was from here that he retired in 1922 As a commanding officer General Sutton was able to temper discipline with friendliness, and his inner knowledge of his men made his concern for the well-being of the young soldier fruitful

By his first wife General Sutton had two daughters and two sons who are now serving in the R A M C In 1917 he married, as his second wife, Miss Mary Wilson, R R C

HERBERT ELWIN HARRIS

M B LOND, F R C S

Herbert Elwin Harris was born in 1860 at Binham in Norfolk, where his family had for many generations been gentlemen farmers He was educated at a school in Truro kept by one of his uncles He went up to Christ's College, Cambridge, taking his mathematical tripos in 1882 At the same time he took his first M B and continued his medical studies at St Bartholomew's Hospital, where he qualified M R C S in 1885 and L R C P in 1886, and got his M B two years later After qualifying he went to Plymouth as house-surgeon but soon returned to London, where for some years he worked in various poor-law infirmaries In 1896 he settled in general practice in Bristol, and it was during this year he obtained his F R C S Shortly afterwards he was appointed anæsthetist at the Royal Hospital for Women and Children, and a few years later he was elected surgeon and given charge of the ear, nose, and throat department During the last war Dr Harris was on the staff of the Second Southern (Territorial) General Hospital with the rank of Captain R A M C and worked as a surgeon at the Beaufort War Hospital, Fishponds, Bristol

Dr Harris was president of the Bristol Medico-Chirurgical Society in 1933–34 and for many years he was a member of the British Medical Association In his early years of practice he was an enthusiastic cyclist, and later he was one of the first medical men in Bristol to drive a motor-car The hobbies of his later years were photography and gardening His patients and his colleagues found him a friendly, courteous man, and he was a skilful surgeon of sound judgment

Dr Harris was twice married—first to Miss Edith Higginson, and of this marriage he had three children A daughter and a son, who succeeded to his father's practice, survive him His second wife, Miss Nellie Thompson, lived only a year after their marriage, and they had no children

In 1934 he retired from practice and lived at Halse, near Taunton, where on May 20 he died suddenly, within a short time of his eighty-first birthday

MR J H PRINGLE

As one of his oldest friends may I add a few words of personal appreciation to your brief notice of J Hogarth Pringle? We were both hospital residents in Edinburgh in 1886–87 and we worked together and lived together in London afterwards Pringle, as you remark, had not the pen of a ready writer and public speaking was no pleasure to him, although he could on occasion express himself clearly and forcibly both in speech and writing His manner undoubtedly had a certain aloofness, partly the result of shyness, partly the result of absorption in the work on which he happened to be engaged, but it soon became warm and cordial In a little coterie of his own friends he was full of geniality and a somewhat sardonic humour But he was a true kindhearted friend, and generous almost to a fault in any case of real need —J T

Parliament

Care of the Merchant Seamen

In the House of Lords on May 20 the Earl of Cork and Orrery complained that there was an unfair differentiation under the Ministry of Health's hospital scheme between the treatment accorded to invalid merchant seamen and patients from the Royal Navy, the Army and the Air Force Officers and men in the mercantile marine, he said, were not classed as "service sick" or "service casualties," and they did not get the service ration In certain circumstances they were supposed to contribute to the cost of their maintenance in hospital—a charge unknown against a naval rating This matter had been taken up by the Seamen's Hospital Society, and the official reply was that "unless injured as a result of enemy action, or unless injured by anything which happened at any point of time when the man was on duty," the seaman was to be asked to contribute towards his maintenance, how could the "point of time" be determined at which a man had contracted, say, pneumonia or rheumatism, or when heart affection or eyestrain or nervous spasm started? He urged that all these petty restrictions should be swept away and the officers and men of the Merchant Navy should be placed on the same footing as their comrades of the Royal Navy

Lord Ailwyn, as post captain, and Lord Gifford as lieutenant commander, supported the admiral of the fleet's appeal, and Lord Gifford pointed out that the sailor is a man who likes his moan

In reply Lord Croft, parliamentary secretary to the War Office, assured Lord Cork that officers and men of the Merchant Service receive the same medical treatment under the Emergency Hospital scheme as members of the fighting services Treatment was given at the cost of the Government for injuries, including illnesses, due to enemy action or sustained in the course of their duty, even if not due to enemy action These men would get all the advantages of the nation-wide organisation of the E H S They were admitted or transferred to the hospital best suited for dealing with their case, and were sent, if necessary, to special centres, such as orthopædic hospitals, head centres or chest centres Convalescent treatment could be given where needed at one of the Red Cross auxiliary hospitals

If a seaman was suffering from an ordinary illness, not directly arising from his calling and was absent from his home town, he could be admitted to an E M S hospital The only difference from the services was that unless the man belonged to a contributory scheme, he would be asked to make a contribution The Government, however, defrayed the rest of the cost This was considered no hardship in view of the rates of pay of the Merchant Navy In the seaman's home town the local hospital would admit him, and the usual financial arrangements of the hospital would apply At the moment the service patient was entitled to a higher meat ration than the merchant seaman, but the Minister of War Transport has asked the Minister of Food to consider whether the Merchant Navy could not be put on the same footing as the Royal Navy

A National Fire Service

The debate on the Fire Services (Emergency Provisions) Bill, which passed through all its stages at a single sitting of the Commons, resolved itself more or less into a discussion on how our system of local government was standing up to the strain of total war On the whole, the House felt that it was unfair to ask local authorities to go on dealing with services—such as fire-fighting—which had become military operations rather than municipal functions, and Commander Stephen

ORIGINAL ARTICLES

CASUALTIES FROM THE WESTERN DESERT AND LIBYA

ARRIVING AT A BASE HOSPITAL

By G. A. G. Mitchell, Ch.M. Aberd.
N. J. Logie, M.B. Aberd., F.R.C.S.
R. S. Handley, M.B. Camb., F.R.C.S.
MAJORS R.A.M.C.

This article was inspired by a remark made by a medical officer that R.A.M.C. personnel working in forward and line of communication areas were anxious to know the results of their treatment. Between us we have seen almost 700 British and Italian casualties, men wounded in every region of the body, including many injured 5–9 days before admission, and we have tried to assess the value of varying types of treatment. Working under conditions of extreme difficulty, and faced with problems of transport, supply, terrain and climate uncommon in other theatres of war, the medical officers in forward areas have achieved results which were admirable for the most part, as judged by the condition of the wounded on arrival at the base. In certain cases, however, the measures adopted were less successful, and it is from such that valuable lessons may be learned, lessons which emphasise that the canons of surgery can seldom be flouted with impunity. By selecting these cases we may apparently present a distorted review, but we have concentrated on the less successful results because error rather than success is the great teacher. Incidentally, medical officers would gain much useful information about the results of their treatment if they made more use of the official follow-up cards which are available.

FLESH WOUNDS

Every case admitted had wounds of the soft tissues of varying severity, and many also suffered from damage to other structures. The less serious cases had had no treatment except one or more dressings, the favourite local applications being sulphanilamide and acriflavine, while all except a small minority had received prophylactic doses of antitetanic serum. Anti-gas-gangrene serum was seldom employed.

The majority of the more serious wounds had been subjected to débridement or complete excision, and the resulting cavities had been treated with sulphanilamide. Thereafter the procedure varied. Most of the wounds were left open, but sometimes suture was attempted; sometimes the cavity was packed with plain gauze, and a few had been packed and partially sutured, an attempted compromise between open and closed treatments which usually failed. Undoubtedly the wounds which were left open did best. Examples of successful primary sutures were rare, nearly all having become septic, so that the stitches had to be removed after arrival at the base. The failures were due to incomplete or too late excision of damaged tissues, the presence of foreign bodies, tight suturing, insufficient drainage, or lack of rest; the liberal use of sulphanilamide did not neutralise the neglect of these cardinal points. Loose packs produced no ill results and may have helped to keep the sulphanilamide in contact with the wound surfaces. Tight packing was encountered several times, mainly in wounds of the extremities, and usually with deplorable results. Pain was excessive, the wounds were septic, the general condition was often poor, and there was the added disadvantage that removal was often impossible without an anæsthetic.

The question of drainage is a difficult one, and is closely related to the procedure adopted after cleansing the wound, but we believe that certain primary sutures would have succeeded had a separate drainage incision been made in the most dependent position, through which a jaconette or rubber drain could have been inserted. Drainage-tubes were seldom employed and counter-incisions were conspicuous by their absence—not a surprising fact, for an infected area requiring such incisions on reaching the base may well have had adequate drainage through the original wound when last treated. It was found that gauze packing was worse than useless as a method of draining sutured wounds on account of coagulation of the enmeshed exudate; well-vaselined gauze strips are more effective as drains than dry gauze, provided the suturing is not too tight.

A number of attempts had been made in forward areas to remove foreign bodies before radiography was possible, and a high proportion of these operations were failures. Therefore unless a foreign body can be seen or felt, or is producing severe symptoms, it is unwise to attempt its removal until accurate localisation has been effected, and foolish to do a primary suture after such an operation unless all corners of the wound have been inspected. This is especially true in areas where the presence of important structures or large muscular masses renders exploration difficult or dangerous.

When there are extensive or multiple wounds the advantages of splinting might be considered more often, and if tendons or nerves are severed the limb should be maintained by splints in the position most favourable for repair. This important principle of surgery was neglected in several cases, and employed with excellent results in others.

HÆMORRHAGE

We have mentioned that tight packing of wounds produced deplorable results. Such packs were doubtless inserted to procure hæmostasis, and if the journey between the various medical stations is short no harm may result, but when days may elapse between insertion and removal this method should be avoided.

Realising the difficulties of searching for a divided vessel when working in unfavourable surroundings, perhaps with inadequate instruments and defective lighting, we suggest that if a bleeding point cannot be secured and tight packing is used as a last resort, then the fact should be prominently noted in the field medical card, so that the packing can be removed at the first place where reasonable surgical facilities exist. In palmar wounds, where prolonged packing is particularly undesirable, the relative safety of arresting hæmorrhage by a palmar pad and a firm bandage over the clenched fist is worth remembering. The bandage can be slackened and readjusted by an orderly whenever necessary, whereas the pressure of a pack cannot be eased so simply. Incidentally the search for bleeding points would be greatly facilitated if small self-retaining retractors were included in surgical haversacks and operating sets.

No cases were admitted wearing tourniquets, but a few arrived in whom layer after layer of bandages had been firmly applied to a limb to control hæmorrhage. These had become saturated with dried blood, and formed a rigid case constricting the limb, producing severe pain locally and œdema of the parts distally. If exploration and direct control of bleeding is impossible, then the lesser of two evils is the use of a pack rather than layers of bandages.

Severe grades of anæmia were uncommon but several patients would have benefited from blood or plasma transfusions before being sent down the line.

CHEMOTHERAPY

Chemotherapy was used frequently, sulphanilamide or sulphapyridine being given by mouth, applied locally to the wound, or the two methods were combined. The dosage given by mouth varied considerably and the regularity of administration fluctuated as the patient passed from stage to stage of the journey. Calculations made from field medical cards and other documents showed that the amounts given were usually between 1 and 4 g. daily—seldom more and often less. From a study of the condition of the cases on arrival at the base we are convinced that those who received the larger doses of the drug showed less local sepsis and had fewer complications, and we therefore believe that larger doses should be given by mouth as a routine, and that local applications of sulphanilamide are also advisable because they provide a greater concentration of the drug in the vicinity of the infecting organisms. Oral administration should never be omitted, because local applications may be washed out of the wound if the discharge is profuse, or the drug may all be absorbed and excreted within 60 hours

Medical News

University of Oxford

A two month course of instruction for the diploma in ophthalmology will begin at the Oxford Eye Hospital on Monday, Oct 13 The examination for the diploma will begin on Dec 8, names must be received at the university registry not later than Nov 19

National University of Ireland

The following official degrees are to be conferred —

M Ch —Prof R D Joyce, Dr P J Keogh and Mr P J Dempsey M D —Dr J A Geraghty M A O —Mr R J White

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A meeting of the Biochemical Society will be held at the National Institute for Medical Research, Hampstead, N W 3, on Saturday, June 7, at 2 30 P M

At the annual general meeting of the Royal Medical Benevolent Fund held on May 14, Sir Thomas Barlow, F R S, was re elected president, Dr Lewis Glover, hon treasurer, and Mr R M Handfield Jones, hon secretary

The Ministry of Health has arranged with the British Hospitals Association that voluntary hospitals that have had to reduce the number of their civilian beds on account of bombing shall compensate the ministry according to the number of beds closed A proportion of the hospitals' normal sick will be treated at the expense of the Emergency Hospital Scheme in the outer hospitals, and the minister feels that it is fair that the hospitals should make some contribution to the cost

The Katherine Berkan Judd prize of a thousand dollars has been awarded to Prof E L Kennaway, F R S, director of the Chester Beatty Research Institute at the Royal Cancer Hospital, London, and to Prof J W Cook, F R S, regius professor of chemistry in the University of Glasgow The prize is awarded annually by the Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York, for outstanding contributions to the knowledge and cure of cancer during the previous two years

The Medical Research Council has made a grant to the London County Council of £200 a year to pay a technician at the central pathological laboratory In 1938 the Rockefeller Foundation agreed to provide £5000 a year for five years for psychiatric research at the Maudsley Hospital The war has limited the scope of this work, but in agreement with the foundation a programme of research on a small scale is being carried out at one of the emergency hospitals to which the foundation has made a grant of £1500 It has also given £300 to buy special apparatus for an investigation at another emergency hospital

An award of the Dr Jessie Macgregor prize of not less than £50 will be made in July for the best original work in the science of medicine presented by a medical woman who is a graduate of the University of Edinburgh, or who has taken the triple qualification, and who has studied medicine for at least one year in Edinburgh before qualifying The work may be published or unpublished, but must not have been published more than three years ago The successful applicant shall, within six months of the award, deliver a lecture on the subject of her work Applications must reach the convener of trustees, Royal College of Physicians, Edinburgh, 2, not later than June 30

In a recent circular (No 2362) the Minister of Health reminds local authorities and joint tuberculosis boards that when a tuberculous person changes his residence permanently his records should be transferred to the new area But the minister does not consider that evacuation constitutes a permanent change, and unless the transfer has already been made he would not have the records of evacuees moved On the whole, local authorities have cooperated well to ensure continuity of treatment for the tuberculous Some authorities give each patient a postcard addressed to the T O on which he is asked to send his new address if he moves The minister thinks this practice might well be extended especially in areas liable to air attack

THE Pharmaceutical Society has received an assurance from the Ministry of Labour that May 31—the final date fixed for application for deferment by men liable to military service—does not apply to pharmacists and dispensers Men in these categories (see THE LANCET, May 3, p 577) will not receive their calling up notices until their cases have been considered by the Central Pharmaceutical War Committee, and they should do nothing until they receive a communication from the committee A questionnaire will be sent to every pharmacist on the register whether or not of military age, for the age may be raised later and the committee wish to have details of the pharmaceutical situation in all localities The Ministry of Labour requires to know the number of men released for service, and to have an indication in each national health insurance area of the proportion who remain The hospital cases will be considered by a special subcommittee centrally and the shop cases will be sent to the pharmaceutical committees The Central Pharmaceutical War Committee will require the pharmaceutical committees to classify the men as (a) those who should go and (b) those who should stay, giving their reasons where they recommend retaining a man Retention will be recommended only where it is shown that pharmaceutical work of public importance is being done by the man and that no substitute can be found

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Infectious Disease in England and Wales

WEEK ENDED MAY 17

Notifications —The following cases of infectious disease were notified during the week smallpox, 0, scarlet fever, 1153, whooping-cough, 4086, diphtheria, 926, enteric fever, 34, measles (excluding rubella), 11,909, pneumonia (primary or influenzal), 1067, puerperal pyrexia, 126, cerebrospinal fever, 284 (Liverpool 18, Birmingham 14), poliomyelitis, 2, polio encephalitis, 1, encephalitis lethargica, 2, dysentery, 77, ophthalmia neonatorum, 80 No case of cholera, plague or typhus fever was notified during the week

Deaths —In 126 great towns there was no death from smallpox, scarlet fever or enteric fever, 27 (2) from whooping-cough, 17 (0) from measles, 25 (3) from diphtheria, 36 (5) from diarrhœa and enteritis under 2 years, and 21 (2) from influenza The figures in parentheses are those for London itself

Birmingham had 3 fatal cases of measles and 3 of diphtheria There were 5 deaths from whooping cough at Liverpool, and in the same week Glasgow reported 10

The number of stillbirths notified during the week was 219 (corresponding to a rate of 40 per thousand total births), including 18 in London

Appointments

DE SWIET, JOHN, M D Lond, M R C P assistant physician at Staines Hospital

KIRKBY, W M, M R C S examining factory surgeon for Porthcawl, Glam

PARRY JONES, WILLIAM, M R C S examining factory surgeon for Llangefni, Anglesey

Births, Marriages and Deaths

BIRTHS

BRADSHAW —On May 21 the wife of Dr D B Bradshaw of Huddersfield—a daughter

KELSEY —On May 21, at Cheam, the wife of Captain H M Kelsey, R A M C —a daughter

MACKENZIE —On May 24, at Woking, the wife of Dr Melville Douglas Mackenzie—a son

PECK —On May 22, at Chartham, near Canterbury, the wife of Dr J P Saville Peck—a daughter

PRYS JONES —On May 23, at the Denbighshire Infirmary, the wife of Dr T B Prys Jones—a daughter

ROOKE —On May 24, the wife of Dr A W M Rooke, of North Finchley—a daughter

MARRIAGES

BARRINGTON WARD—REUTER —On May 22, in London, Sir Lancelot Barrington Ward, F R C S, to Miss C W Reuter

EDWARDS—COX —On May 3 at Camborne John Anthony Clifford Edwards, F R C S, of Westerham, to Stella Elizabeth Cox

DEATHS

HARRIS —On May 20, Herbert Elwin Harris, M B Camb, F R C S, formerly of Clifton, Bristol, aged 80

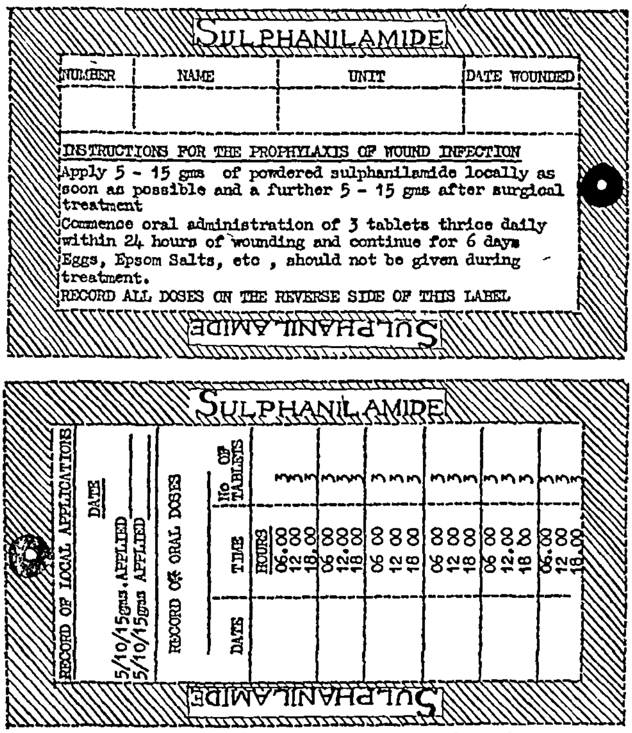
HENSHAW —On May 22, at Derngate, Northampton, William Alfred Henshaw M R C S, aged 68

MOORE —On May 18, Cecil Frank Moore, M B Lond, formerly of Slough

ROBINS —On May 21, John Mannix Robins, F R C S E, of Colchester aged 33

ROWLAND —On May 20, John Rowland, M C, M R C S, of Battersea Bridge Road, S W 11, aged 49

After careful consideration of many cases we are in agreement with our colleague Major G A H Buttle that the present dosage recommended in official memoranda for the prophylaxis of wound infection is inadequate, and we suggest that all wounds should be dusted with finely powdered sulphanilamide as soon as possible after wounding The amount to be used must obviously depend on the size or number of the wounds, but the *total applied should not exceed 15 g at one time* A further local application of a similar amount should be made in all severe injuries when surgical cleansing of the wounds is undertaken Such applications would be greatly facilitated if medical officers and units were provided with Cellophane packets or tubes each containing 5 g of finely powdered sterile sulphanilamide These packets might actually be enclosed in the first field dressing Oral administration consisting of three tablets (1 5 g) thrice daily should begin as soon as possible, and certainly within 24 hours of the occurrence of the casualty, and should be continued for 6 days The dates, times and the dosages given should be carefully recorded in the field medical cards In practice, as we have said, the doses were given sporadically, and in order to ensure regularity a characteristic label might be provided which could be attached in a conspicuous position to men selected by medical officers for chemotherapy Thereafter wherever the man might go and by whatever method of transport, the fact would be patent that he was receiving sulphanilamide, and an orderly could go round at stated times with a supply of the drug, give three tablets to each man wearing the label, and at the same time record the fact by marking the card with an X in the appropriate place It is simple to devise a printed label which reduces writing to an absolute minimum (see figure)



SULPHANILAMIDE

NUMBER	NAME	UNIT	DATE WOUNDED

INSTRUCTIONS FOR THE PROPHYLAXIS OF WOUND INFECTION

Apply 5 - 15 gms of powdered sulphanilamide locally as soon as possible and a further 5 - 15 gms after surgical treatment

Commence oral administration of 3 tablets thrice daily within 24 hours of wounding and continue for 6 days

Eggs, Epsom Salts, etc , should not be given during treatment.

RECORD ALL DOSES ON THE REVERSE SIDE OF THIS LABEL

SULPHANILAMIDE

SULPHANILAMIDE

RECORD OF LOCAL APPLICATIONS

DATE

5/10/15gms.APPLIED

5/10/15gms APPLIED

RECORD OF ORAL DOSES

No OF TABLETS	TIME HOURS	DATE
3 3 3	06.00 12 18.00	
3 3 3	06.00 12.00 18	
3 3 3	06 00 12 18	
3 3 3	06 00 12 18	
3 3 3	06 00 12.00 18	
3 3 3	06.00 12 18.00	

SULPHANILAMIDE

Front and back of label In practice the labels could be white with a red border

If serious infection supervenes, or if the wound is already infected when the man is first seen, then larger doses are required, for example five or six tablets every 6 hours (10–12 g daily) for the first 2 days, the dose being gradually reduced as the condition improves Such doses were never given before admission even in severe cases Should gas-gangrene develop or be suspected, sulphapyridine should be given instead of sulphanilamide, because although both act against *Clostridium welchii* the former is slightly more active against the *Cl septique* These larger doses are potentially dangerous if continued for more than 7–10 days, but by that time the patient would have reached a where a blood examination could be performed Apart from minor degrees of cyanosis no soldier was admitted who had suffered from chemotherapy , a number may have suffered from the lack of it It is interesting to record that we have twice found that complications due to hæmolytic streptococcal infection can develop in patients receiving 8 g of sulphanilamide daily

As regards local applications, sulphanilamide apparently produced better results than such antiseptics as eusol, acriflavine or hydrogen peroxide, and this was particularly noticeable in cases where the dressings had not been changed for 3 days or more Under such conditions those treated with the usual antiseptics were often heavily infected, whereas those dressed with sulphanilamide were often surprisingly clean Those wounds which had not responded so well to sulphanilamide were found to be infected with staphylococci—usually *Staphylococcus aureus*

Whether or not the best method of applying the drug locally has yet been found is questionable Application to deep or complicated cavities is always difficult, for example to the knee-joint or to large wounds made by modern missiles where the underlying damage is often so much more extensive than the size of the superficial wound would lead one to expect In cases arriving at the base it was found that in superficial wounds the powder was more adherent to the dressings than to the raw surface and was removed with the soiled dressings while in many cases it was apparent that incompletely crushed tablets had been used both for surface application and for insertion into cavities Thus in cases with deep wounds irregular masses were found to be extruding from the cavities, and sulphanilamide in this lumpy state can scarcely be expected to exert its maximum effect

In cooperation with Major Buttle we have been experimenting with various methods which could be employed in forward and line-of-communication areas For example, in surface wounds it may be used as a fine powder applied evenly under a Vaseline spread (in our opinion the best method) , as an ointment (5 g sulphanilamide to 1 oz vaseline) applied directly to the wound or spread on gauze or lint , in the form of a solution containing *5% sulphanilamide, 20% dextrose* and 4% sodium bicarbonate, in which the dressings may be soaked, or which may be sprayed on the wound, left for 10–15 min , and then covered by a vaseline spread , this last method produces a thin adherent film of the drug over the entire wound area For deep cavities and complicated spaces a solution containing 5–8% sulphanilamide in 80–100% glycerin provides an easy method of introducing the drug to every recess, and it also makes an almost non-adherent dressing for more superficial wounds

FRACTURES

Very few fractures have been missed All others had been treated in orthodox ways, and the great majority arrived in excellent general condition Most of the fractures were compound and comminuted, and many were complicated by involvement of joints, vessels or nerves Nearly all these had been operated on and fixed in wooden, wire or improvised splints, in plaster, or in the case of fractured femora, in Thomas splints The few who arrived in poor condition had other injuries, usually visceral, or their wounds had become heavily infected

The results being generally so effective, we have little to offer in the way of constructive criticism Plaster of paris, the best form of support for most limb fractures, might have been used more often, and when it was employed the casings were sometimes too short or too thin for adequate support, although this may have been due to a scarcity of plaster in the forward areas The use of plaster slabs was not sufficiently appreciated These can be held in position by a few circular turns of a plaster bandage, the result being a case very thick and strong in one part to give adequate support, and so thin elsewhere that it may be cut with ordinary scissors if the need arises (actually we saw no instance of damage from too tight a plaster) Plaster splints composed entirely of circular turns are less strong, weight for weight, than those employing the girder principle, and their uniform thickness precludes their easy removal without special instruments The slab method, therefore, not only saves plaster but also possesses definite

necessary, as in our experience they travelled badly Twenty chest and eleven abdominal cases which were admitted were all seriously or dangerously ill, and the most careful selection should be made before men with such injuries are subjected to a long and, at the best of times, trying journey A true assessment of the progress of such cases, favourable or unfavourable, can only be made by constant observation, preferably by the same person, and this is a sound reason for retaining these patients as long as possible at the first point where a surgical team is located It is courting disaster to send soldiers with abdominal wounds straight to the base, even when the wounds are apparently simple, for it is axiomatic that any wound of the abdominal parietes should be treated as involving the peritoneal cavity until this can be definitely disproved Two cases illustrate this point One man had an intestinal obstruction as a result of a small perforating abdominal wound 5 days before, and another with a similar injury had developed a general peritonitis and ileus We have been able to verify the well-established facts that the size of an entry wound may bear no relationship to the amount of internal damage, and that wounds of the buttock, groin and perineum are often complicated by injuries to abdominal or pelvic viscera, or to the urethra The danger of overlooking a ruptured urethra was well exemplified in a man who was found on arrival to have widespread extravasation of urine from such a lesion, with gangrene of all the superficial tissues of the perineum and genitalia, he died a few days later from secondary hæmorrhage He might have recovered if an early suprapubic cystostomy had been performed and free drainage provided at the site of extravasation

The remarks about abdominal cases apply with almost equal force to chest injuries, and the fact that wounds of the root of the neck or shoulder regions are liable to be accompanied by intrathoracic lesions was sometimes forgotten Several men who arrived with large accumulations of blood or sanio-pus in a pleural cavity would have suffered less cardiac and respiratory embarrassment if a paracentesis had been performed before their evacuation This procedure may tend to restart hæmorrhage, but the danger can be averted by air replacement and by retaining cases for 24–48 hours after paracentesis It would then be easy to determine whether fresh bleeding had occurred, and if not the subsequent journey could be made in relative comfort and safety One man with a sucking pneumothorax came under observation with such overwhelming infection of the pleura and parietes that he was beyond surgical aid

This article was written before we knew that an official memorandum (M E Technical Instructions, 1941, No 3—War Surgery) was in the course of production, and it is significant that, broadly speaking, the conclusions are similar, although *the memorandum deals chiefly with experiences in other* theatres of war

We wish to express our thanks to Colonel H J A Longmore for permission to publish this article, and to our medical and nursing colleagues on the staff of the hospital who have helped us in innumerable ways in the treatment of our cases We are especially indebted to Colonel Monro, consultant in surgery, G H Q, M E, for his criticism and advice

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REDUCTION OF DUST-BORNE INFECTION BY TREATMENT OF BEDCLOTHES

BY

M VAN DEN ENDE, M B CAPE TOWN

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THE possibility of aerial transmission in the spread of infection in hospital wards is becoming increasingly recognised The infective agents may be conveyed through the air as droplets, droplet nuclei (Wells) or on dust particles Dust as a vehicle may be of special importance in the spread of bacteria, such as streptococci, diphtheria bacilli, and staphylococci, which are particularly resistant to drying The presence of large numbers of viable and virulent streptococci in blankets and dust has often been demonstrated (Deicher 1927, Thomas 1941) A number of examples of hospital cross-infection have already been reported in which streptococci carried in dust have been responsible (e g, White 1937, Cruickshank 1938) Hare (1941) has succeeded in recovering streptococci from the environment of respiratory carriers, and considers that dry, dust-borne organisms may be important in the spread of streptococci from these carriers Wright, Shone, and Tucker (1941) have recently shown that *Corynebacterium diphtheriæ* also may survive in the dust of hospital wards in sufficient numbers to constitute a risk of cross-infection

Studies of the bacterial population of the air in hospital wards consistently show an increase each time the floors are swept and the beds made (Brown and Allison 1937), because of the dust which is distributed by these activities Blanket dust, which consists largely of scales and fragments of wool fibres, is of special importance because it is buoyant and can remain in suspension for long periods The seriousness of the risk of infection must be obvious, when it is realised that floor-dust may harbour millions of hæmolytic streptococci per gramme, and that a single blanket may contain many thousands of these organisms

Attention has recently been focused on the possibilities of preventing the aerial spread of pathogenic micro-organisms by ultraviolet light (Wells and Wells 1936) and by antiseptic aerosols (Trillat 1938, Pulvertaft et al 1939, Pulvertaft and Walker 1939, Twort, Baker, Finn and Powell 1940, Cruickshank 1940) The efficacy of these methods cannot be demonstrated on the dried organisms found in dust, for many of these are resistant to their action Tests of the efficacy of U V light or antiseptic aerosols are often based on the reduction of the total number of organisms in air These methods may be highly effective against undried organisms disseminated in fresh droplets from the respiratory tract, but in hospital wards the bulk of organisms in the air may be dust borne, and therefore not noticeably affected by these methods An evaluation of their efficacy on other than dust-borne organisms may therefore be impossible

Methods designed to reduce the number of dust borne organisms in air are likely to assist in preventing the spread of diphtheria, streptococcal, and other respiratory infections in hospital wards In addition, the elimination of dust from floors and blankets is necessary before other means, more particularly physical and chemical methods of sterilising air, can be investigated

For laying dust a variety of oils have been in use for some years Last year we discussed (van den Ende, Lush and Edward 1940) the use of one of these—spindle oil—and pointed out its probable value in ward hygiene Oiling of floors of occupied rooms reduces the number of dust-borne organisms distributed into the air by the mechanical disturbances associated with ordinary occupation This reduction cannot be so significant in hospital wards where most of the dust is derived from bedclothes Investigations of methods designed to reduce the numbers of dust-borne organisms from bedclothes were conducted on two separate and distinct lines

(*a*) The treatment of bedclothes with antiseptics to render them bactericidal for bacteria deposited on them Some of these were partially successful but the majority were not bactericidal

(*b*) The treatment with dust laying preparations in order to reduce the amount of dust and therefore the number of dust borne organisms which can be liberated One of these—liquid paraffin—has in laboratory tests proved highly satisfactory

EXPERIMENTS WITH ANTISEPTICS

Woollen and cotton textiles were treated with a large variety of antiseptics With the majority the textiles were simply soaked in suitable solutions of the antiseptic and allowed to dry Some of the antiseptics entered into chemical combination with wool proteins The substances used included phenols, cresols, thymol, monochlor-thymol, monochlor-iso-thymol, terpineol, carvacrol, chlorcarvacrol, iodine, sodium and potassium

roughly parallel to the reduction in the number of floating dust particles In the case of woollen materials, the minimum effective concentration is in the region of 20% paraffin in white spirit, whereas cotton requires treatment with a solution of 30% or more

The optimal concentration appears to be 30%, since this ensures maximum effectiveness in the case of woollen materials and is the highest concentration that can be applied to cotton (sheets) without making them noticeably oily

The samples of serge, blankets and sheets were subjected to a second laboratory test in which they were infected as in the previous test or with hæmolytic streptococci of Lancefield's group A, and then shaken in a specially constructed tank of 10 cu ft capacity The tank was fitted with an ultraviolet lamp for the destruction of the free streptococci at the end of the experiment, and before the tank is reopened Strips of material approximately 8 in by 20 in were used and plates were exposed for three consecutive 5-min periods after shaking The results summarised in table II confirm those of the first series of experiments in showing that paraffin treatment results in a reduction of at least 90% in the number of bacteria which can be liberated by shaking woollen and cotton textiles

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Cotton sheeting	,,	50‡	245	62	66	3	73	95
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* Repeatedly autoclaved after treatment
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A Counts during the first 5 min period after beating
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Table III shows the results of a number of experiments in which single sheets or blankets were shaken in a closed room Treated sheets and blankets and untreated controls were infected with a serum-broth suspension of staphylococci or streptococci from a scent spray, or by sprinkling with equal amounts of dry powdered streptococci mixed with autoclaved floor-dust The results agree with earlier experiments in demonstrating that the number of bacteria which can be liberated from blankets is reduced by about 90% by treatment with 30% liquid paraffin in white spirit The dust-laying effect on sheeting (cotton) of the same concentration of oil, though significant (70%+), is not as striking

As a final test, six blankets from the bunks in a private air-raid shelter were used Three of these were dry cleaned in white spirit without liquid paraffin, and marked as controls The other three were treated with a 30% solution of liquid paraffin in white spirit All six blankets were then returned to the bunks The occupants of the shelter, who were not informed of the experiment, did not notice the difference in these blankets After 16 days each set of three blankets was thoroughly shaken in a closed room Blood-agar plates were exposed in the room for two consecutive 5-min periods after the shaking The average plate count for the first 5-min period after shaking the control blankets was approximately 2400, and for the second period 490 The corresponding counts after shaking the treated blankets were 330 and 32 This was repeated twice and the mean ratio of total organisms liberated from treated and untreated blankets was 1 11

DISCUSSION

These investigations have shown that the treatment of woollen and cotton textiles with a solution of medicinal paraffin in white spirit results in a great reduction in the amount of dust and dust-borne organisms which can be liberated from them Effectively treated textiles are not excessively oily—in fact, it is usually difficult to distinguish them from the untreated ones by ordinary observation and touch—so that complaints from occupants of beds with treated bedclothes are unlikely Experience has shown, however, that the method of application as described is laborious and relatively expensive when special equipment is not available, as is the case in the majority of hospital laundries It was found, for instance, that where the suitable equipment was lacking the treatment of the bedclothes for a ward of 11 beds fully occupied 3 people for 5 hours A total of 5 gallons of liquid paraffin at a cost of £3 and 10 gallons of white spirit (10*s*) was required, although about two-thirds or more of these quantities were finally recovered and the remaining third was lost mainly through wastage, which was inevitable with the unsuitable equipment The treatment has furthermore to be repeated after washing or frequent autoclaving It cannot therefore be recommended for immediate adoption on a large scale, but it does deserve adequate trials in hospital wards Such trials could to advantage be conducted in scarlet-fever or oto-rhino-laryngological wards, in which the numbers of dust-borne streptococci in the air are often large enough to allow the streptococci to be used as the indicator organism Such trials are now in progress, and if, as seems probable, the treatment of bedclothes results in significant reduction of air-borne streptococci, a further and more extensive search for more suitable methods of application of liquid paraffin or other dust laying oils will be justified

A simple and practicable method of dust-laying on bedclothes may be of great assistance in preventing the spread of pathogens such as streptococci and *C diphtheriæ* in hospital wards It will furthermore prove valuable in the study of aerial spread of infection in general, by eliminating the dust-borne organisms which at present make a study of the pathogenic bacteria of the air very difficult

SUMMARY

Attempts to render textiles bactericidal for bacteria deposited on them have been unsuccessful

A method is described for the treatment of bedclothes with medicinal paraffin dissolved in white spirit This treatment reduces the amount of dust which can be liberated from blankets and sheets by approximately 90% without rendering them objectionably oily

The method is too laborious for large-scale adoption but deserves further trial in hospital wards If it can be simplified, it should help to prevent the spread of ward infections

Our thanks are due to Mr J W C Phillips for suggesting the use of liquid paraffin for laying dust on textiles, and for providing samples of paraffin treated materials, to Mr B H Wilsdon, of the Wool Industries Research Association, Leeds, for his advice and for samples of serge treated with water proofing, mothproofing and bactericidal agents, to Dr R B Bourdillon, on whose advice these investigations have been undertaken, and who supplied us with the mechanical beater, and to Dr C H Andrewes for the interest he has shown throughout the investigations

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The optimal concentration appears to be 30%, since this ensures maximum effectiveness in the case of woollen materials and is the highest concentration that can be applied to cotton (sheets) without making them noticeably oily

The samples of serge, blankets and sheets were subjected to a second laboratory test in which they were infected as in the previous test or with hæmolytic streptococci of Lancefield's group A, and then shaken in a specially constructed tank of 10 cu ft capacity The tank was fitted with an ultraviolet lamp for the destruction of the free streptococci at the end of the experiment, and before the tank is reopened Strips of material approximately 8 in by 20 in were used and plates were exposed for three consecutive 5-min periods after shaking The results summarised in table II confirm those of the first series of experiments in showing that paraffin treatment results in a reduction of at least 90% in the number of bacteria which can be liberated by shaking woollen and cotton textiles

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Table III shows the results of a number of experiments in which single sheets or blankets were shaken in a closed room Treated sheets and blankets and untreated controls were infected with a serum-broth suspension of staphylococci or streptococci from a scent spray, or by sprinkling with equal amounts of dry powdered streptococci mixed with autoclaved floor-dust The results agree with earlier experiments in demonstrating that the number of bacteria which can be liberated from blankets is reduced by about 90% by treatment with 30% liquid paraffin in white spirit The dust-laying effect on sheeting (cotton) of the same concentration of oil, though significant (70%+), is not as striking

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DISCUSSION

These investigations have shown that the treatment of woollen and cotton textiles with a solution of medicinal paraffin in white spirit results in a great reduction in the amount of dust and dust-borne organisms which can be liberated from them Effectively treated textiles are not excessively oily—in fact, it is usually difficult to distinguish them from the untreated ones by ordinary observation and touch—so that complaints from occupants of beds with treated bedclothes are unlikely Experience has shown, however, that the method of application as described is laborious and relatively expensive when special equipment is not available, as is the case in the majority of hospital laundries It was found, for instance, that where the suitable equipment was lacking the treatment of the bedclothes for a ward of 11 beds fully occupied 3 people for 5 hours A total of 5 gallons of liquid paraffin at a cost of £3 and 10 gallons of white spirit (10s) was required, although about two-thirds or more of these quantities were finally recovered and the remaining third was lost mainly through wastage, which was inevitable with the unsuitable equipment The treatment has furthermore to be repeated after washing or frequent autoclaving It cannot therefore be recommended for immediate adoption on a large scale, but it does deserve adequate trials in hospital wards Such trials could to advantage be conducted in scarlet-fever or oto-rhino-laryngological wards, in which the numbers of dust-borne streptococci in the air are often large enough to allow the streptococci to be used as the indicator organism Such trials are now in progress, and if, as seems probable, the treatment of bedclothes results in significant reduction of air-borne streptococci, a further and more extensive search for more suitable methods of application of liquid paraffin or other dust laying oils will be justified

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SUMMARY

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A method is described for the treatment of bedclothes with medicinal paraffin dissolved in white spirit This treatment reduces the amount of dust which can be liberated from blankets and sheets by approximately 90% without rendering them objectionably oily

The method is too laborious for large-scale adoption but deserves further trial in hospital wards If it can be simplified, it should help to prevent the spread of ward infections

Our thanks are due to Mr J W C Phillips for suggesting the use of liquid paraffin for laying dust on textiles, and for providing samples of paraffin-treated materials , to Mr B H Wilsdon, of the Wool Industries Research Association, Leeds, for his advice and for samples of serge treated with water proofing, mothproofing and bactericidal agents , to Dr R B Bourdillon, on whose advice these investigations have been undertaken, and who supplied us with the mechanical beater , and to Dr C H Andrewes for the interest he has shown throughout the investigations

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FOUR CASES OF ABDOMINAL ANEURYSM

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Osler (1905) gives credit to Vesalius for the first description in 1567 of an abdominal aneurysm, and Kampmeier (1936) has found 386 cases of abdominal aneurysm recorded in all the literature Thus, while abdominal aneurysms provide some of the most varied and dramatic pictures seen in clinical medicine, it is not given to many observers to see three cases within a year, as E H Goodman did in New York in 1914 At Redhill County Hospital we have recently seen four cases in just over a year Goodman's cases all presented themselves with left-sided abdominal or loin pain of short duration, but our four cases were more varied in their symptoms Three were aneurysms of the abdominal aorta and the fourth was an aneurysm of the cœliac axis

CASE-RECORDS

CASE 1 —An architect, aged 57 Probably acquired syphilis at 18, but was untreated because there was no obvious chancre Apart from constipation he was well until 4 years before admission During these years he had constant pain in the left lower lumbar region and had gradually become more anæmic For 4 months before admission there had been an exacerbation of this pain, with radiation down the left sciatic nerve, often so severe that morphia had to be given Severe scrotal pain had caused him to wear a suspensory bandage For a fortnight before admission he had bad attacks of dyspnœa on exertion and even at rest

He was noticeably thin, anæmic, and orthopnœic The abdomen was prominent, in its left upper quadrant and in the left loin was a rounded tumour (fig 1A) expanding with the pulse. Except in front it was dull on percussion and its upward pressure appeared to have caused compression and partial collapse of the lower lobe of the left lung The heart showed no enlargement and no valvular murmurs The blood-pressure was 120/60, but on the evening after admission and on other occasions he collapsed for short periods in which there was acute dyspnœa and a rapid weak pulse (B P 80/50) The pulse rate varied from 80 to 100 per min These attacks were at times brought on when he was lifted in bed and in them he was sometimes unconscious for a few minutes

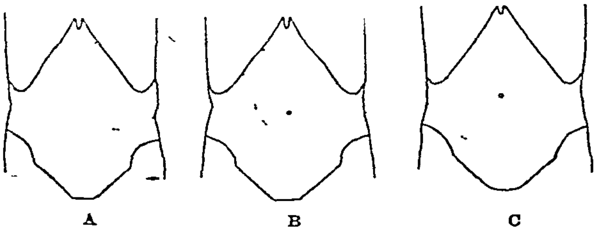

FIG 1—A B and C show areas of aneurysms in cases 1, 2 and 3 as determined by palpation In each case a smooth, expansile pulsating tumour was felt

Radiogram of the chest was normal, but that of the lumbar spine showed erosion of the anterior aspects of the first and second lumbar vertebræ (fig 2) Electrocardiogram was normal Blood count red cells 1,600,000 per c.mm , Hb 36%, C.I 1 1, reticulocytes 9%, mean cell volume 125 cu μ Blood W R strongly positive He died after being in hospital for nine days, and was euphoric and rambling for the last few days of his life His death occurred during one of the dyspnœic attacks

At autopsy the heart was of average size with normal pericardium, and competent undiseased valves The aorta showed some widening of the sinuses of Valsalva in which were numerous syphilitic scars Atheromatous changes with ulceration and calcification were mixed with the syphilitic changes and spread down from the thoracic to the abdominal aorta In the anterior wall of the aorta at the level of the renal vessels was a large oval orifice measuring 2 in × 1 in This communicated with an aneurysm measuring 10 in × 9 in × 8 in (fig 3) The aneurysm spread to the left across the front of the aorta and the left kidney was embedded in its wall The kidney substance was normal but pale, and the left renal artery was filled with antemortem clot The wall of the aneurysm was entirely of blood clot and reached down to the left psoas muscle, eroding the first and second lumbar vertebræ On the right side the aneurysm crossed the midline, but did not involve the kidney nor compress the inferior vena cava The wall of the aneurysm was not fully organised and was still dark red, giving the impression of a recent rapid increase in size Downwards it extended to the bifurcation of the aorta and here on the left side was a retroperitoneal rupture with much fluid blood There was no free blood in the peritoneal cavity Section of the aortic wall (fig 4) histologically suggested syphilis and also showed definite arteriosclerotic change

CASE 2 —A retired chemist, aged 69 Had lived in India from 26 to 62 years of age There he had cholera, enteric fever and amœbic dysentery, the last at 56 He was an A1 insurance life at 30 and B1 at 44 For many years he noticed a "big abdominal pulse," but otherwise had no symptoms till he was 64, when he began to experience slight angina of effort About 6 weeks before admission he had two attacks of faintness which forced him to sit down, and soon afterwards he had some vague abdominal discomfort, subsequently he had no appetite A few days before admission he had a severe attack of faintness and weakness and later passed some blood per rectum An abdominal swelling was first noticed at this time

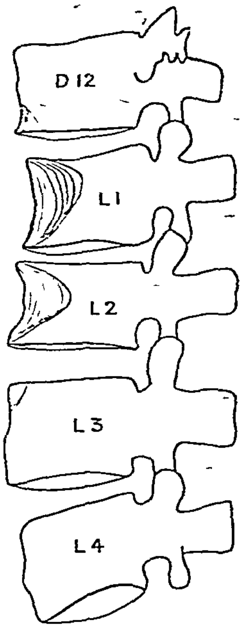

FIG 2—Tracing of vertebral radiogram in case 1 Advanced erosion of L 1 and 2 and slight early erosion of adjacent parts of D 12 and L 3

He was pale and orthopnœic but quite comfortable He was alert mentally and in many ways young for his years Heart and lungs were normal, and the pulses in wrists and thighs were all synchronous Blood-pressure in the arms was 120/80, and in the left thigh 145/80 In the abdomen was a very evident expansile pulsating swelling whose apparent contour is shown in fig 1B It was about 5 in in diameter, with an extension up under the right ribs and down 1½ in below the umbilicus The palpating finger could be passed between the tumour and the ribs, and it could be moved slightly from side to side It moved slightly with respiration and did not extend into the loin No bruit was audible over the tumour

His temperature ranged up to 100°–101° F. during the first week and his pulse rate was 90 Blood W R and Kahn reaction twice negative Red cells 3,600,000 per c.mm , Hb 70% (no improvement with iron therapy) Abdominal radiogram showed a soft-tissue mass free from calcification and not eroding the vertebræ Gall-bladder was normal to dye test A uroselectan radiogram of the renal tracts showed a spastic right ureter, otherwise no abnormality apart from medial displacement of the left ureter in its middle part (fig 5) Electrocardiogram was normal There was no evidence of bleeding from the bowel at any time, and no pain apart from a few abdominal cramps associated with bowel movements, and later realised to be due to interference with the mesenteric blood supply On one occasion after the passage of a large stool there was moderate shock With rest the patient's general condition improved, but the local abdominal signs did not change He was discharged after seven weeks in hospital He was readmitted 16 days later because he had collapsed with severe abdominal pain and vomiting These symptoms had continued for 12 hours He was shocked and his pulse was weak. Temperature was subnormal and pulse rate 92 There was a large globular mass protruding above the umbilicus Pulsation was not observed in it and the doctor who saw him before admission had diagnosed carcinoma of the stomach The patient died 24 hours after readmission when he collapsed suddenly after vomiting

At autopsy the heart was normal apart from atheroma of the coronary arteries The aorta showed advanced atheromatous change, with ulceration and calcification extending from the thoracic to the abdominal part There was some œdema of the lung bases A large aneurysm of the abdominal aorta extended from immediately below the origin of the renal arteries to within an inch of the bifurcation of the aorta (fig 6) This had grown forwards into the mesentery and had displaced it laterally There was no backward extension or erosion of the vertebræ The cavity of the aneurysm was about 8 in in diameter and spherical The right half was filled with old laminated blood clot, whereas on the left side there was some recent clotting without lamination, it was here that the aneurysm had perforated There was much free blood in the peritoneal cavity and in the retroperitoneal space Section of the aortic wall (fig 7) showed definite arterio-sclerotic changes and Dr Hamilton-Paterson considered that there was probably also evidence of syphilis

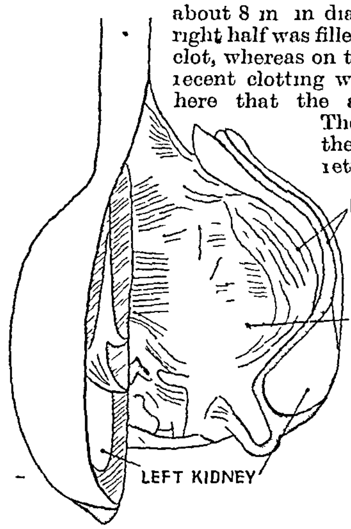

FIG 3—Sectional view of aneurysm in case 1, showing laminæ of clot and incorporation of left kidney in wall of aneurysm

CASE 3 —A plasterer, aged 62 He had no previous illnesses apart from two gonococcal infections, one 40 years and the other 2½ years before admission He had tingling and burning sensations in the right testicle and in the penis at intervals in the 3 years before admission The day before admission he had severe aching pain in the left groin and had frequently vomited foul brownish material The presence of an old left inguinal hernia led to a diagnosis of irreducible hernia and he was sent to the hospital His symptoms continued and because of the abdominal distension a barium X ray examination of the intestinal tract was made This showed distended coils of gut in the upper abdomen, and although the pulse-rate was 70 a small gut obstruction was diagnosed and laparotomy was performed A large abdominal aneurysm was found reaching from 2 in above the umbilicus to the bifurcation of the aorta It was about 4 in in diameter and was causing collapse of the cæcum and the lower part of the small gut

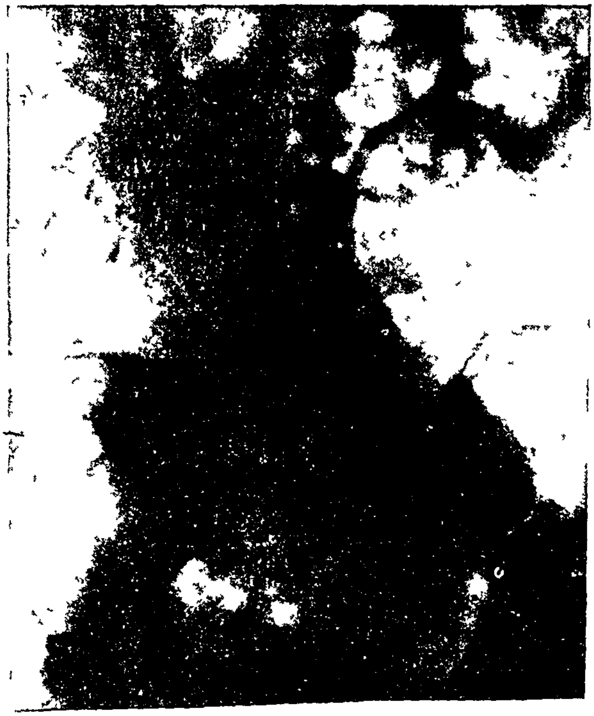

FIG 5—Uroselectan radiogram of renal tracts in case 2 showing soft tissue mass extending to right of spine, and medial displacement of left ureter

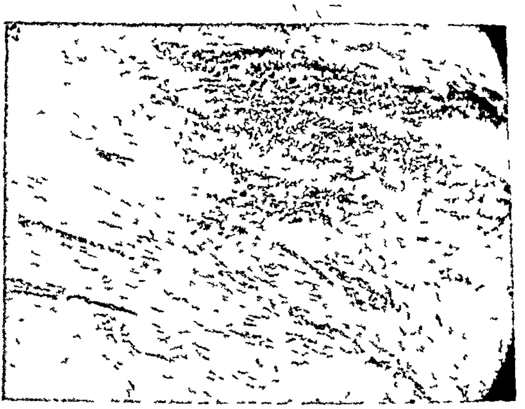

FIG 4—Section through wall of aneurysm in case 1 In upper part a large perivascular collection of lymph and plasma cells is lying between media and adventitia Adventitia thickened and fibrotic, media thinned and excessively vascular and cellular Grossly thickened intima containing fat can be seen in lower part

The patient was later transferred to the medical wards where he was observed to have an expansile pulsating swelling in the right side of the abdomen and more in the lower part (fig 1c) No murmur could be heard in it There was generalised arteriosclerosis, but the heart showed no abnormal signs and the B P in both leg and arm was 120/76 In a radiogram of the chest the heart and abdominal aorta showed no significant abnormality The blood and C S F were normal, and the W R in each was negative The urine was normal The patient continued to complain of paræsthesiæ in the penis and the testicle and of pruritus ani, but on the whole he was very well and could walk strongly at the time of his discharge after 5 weeks The bowels gave no further trouble At home he was well for a further 5 weeks and then suddenly collapsed with intense pain in the right groin He was admitted very shocked and was given morphia He vomited copiously both before and after admission The pulsating swelling remained prominent, and the pulses in the legs remained palpable He passed no urine and remained in a collapsed condition until his death nearly a day later

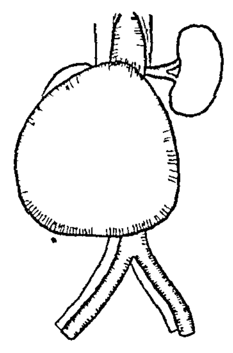

FIG 6—Approximate extent of aneurysm in case 2

At autopsy the heart was normal but the thoracic aorta showed advanced atheroma and the plaques became almost continuous in the first part of the abdominal aorta There was no ulceration and no macroscopic evidence of syphilis About an inch below the openings of the renal arteries was a saccular aneurysm of the aorta about 4 in × 3 in × 3 in spreading out on the right side It reached downwards as far as the bifurcation Posteriorly the internal layer had stripped and formed a dissecting aneurysm within the saccular one The left wall was composed of fibrous tissue and lined by a thin layer of laminated clot On the right side the wall could not be found and there was a large mass of retroperitoneal blood clot extending to the lateral wall of the abdomen and entirely surrounding the right kidney and the head of the pancreas The right kidney was pale, probably as a result of compression The right ureter was normal, but the left was displaced medially by the aneurysm The viscera were otherwise free of significant change Sections of the aortic wall (fig 8) showed changes mainly of arteriosclerotic type, though Dr Paterson did not consider that it was possible to exclude a syphilitic factor since there was considerable lymphocytic infiltration of both adventitia and media

CASE 4 —A ticket inspector, aged 59 A thin man with a 6 weeks' history of cough and slight malaise He had felt extremely unwell for a week On admission his temperature was 101 5° F and he had signs of pneumonia in the left lower lobe B P 170/100 Sputum contained no organisms of note, but he was given M & B 693 The pneumonia resolved very slowly A fortnight after admission he began to complain of epigastric and umbilical pains These often came on about 2 hours after food and were a recurrence of pain which he had noticed for some months before admission A week later doughiness of the abdomen was noticed after a very persistent pain The pains became more frequent and severe, and at night were protracted and agonising Gastric splashing and abdominal tympany were observed during attacks, and after one of them a small amount of blood was vomited A radiogram of the stomach showed two large lesser curvature ulcers Dietary treatment was given but with only partial relief The day before his death he had severe epigastric pain and next morning œdema of the right leg and foot was observed In the afternoon he suddenly collapsed, was blanched and extremely dyspnœic, with a rapid and threadlike pulse He died in a few minutes

At autopsy he had a hypertrophied left ventricle There was little atheroma although some was present in the abdominal aorta On the cœliac axis just below its commencement was a ruptured aneurysm about 1½ in in diameter, its wall formed of fibrin and blood-clot Large quantities of blood were found in the right side of the abdomen behind the peritoneum, extending over the brim of the pelvis and into the right iliac fossa Much of the blood was firmly clotted and had been extravasated for at least a week It had compressed the right external iliac veins and caused the œdema of the right foot Two gastric ulcers were present on the lesser curvature, where the main artery was normal The blood W R was negative, but histological examination of the aneurysm wall again showed a widespread infiltration with lymphocytes (fig 9) These were particularly numerous in the thickened adventitia

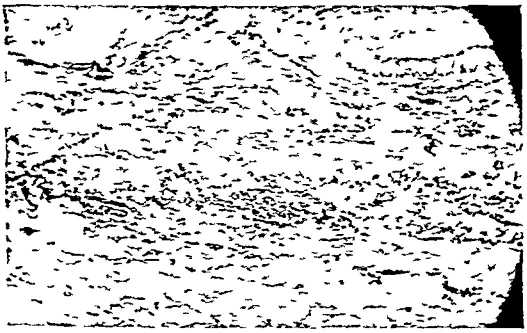

FIG 7—Section through wall of aneurysm in case 2 Fatty adventitia containing large blood vessels seen in upper part rest of figure shows vascular fragmented media containing small perivascular collections of lymphocytes plasma cells and occasional macrophages

DIAGNOSIS

Of these four cases of abdominal aneurysm, in one there was a backward extension into the left loin, and two a forward extension All these three gave the only absolutely incontrovertible sign of abdominal aneurysm—a pulsating, expansile abdominal tumour Although a systolic bruit over the aneurysm has often been reported, we did not hear it in our cases The first case by its backward extension caused severe backache, with later symptoms which suggested both sciatica and left renal disease The forward pressure on the mesentery and gut of one of the other two large aneurysms caused abdominal cramps and the passage of blood per rectum The last of these aortic cases developed the symptoms and X-ray appearances of small-gut obstruction In all three scrotal pains suggestive of renal disease were a feature In one pressure on a kidney and the ureters finally caused a urinary suppression to which the fall of blood-pressure contributed The fourth case a small aneurysm of the cœliac axis associated with gastric ulcers, caused bouts of considerable epigastric pain by retroperitoneal leaking of blood It gave no signs characteristic of abdominal aneurysm

Such varied clinical pictures are a feature of abdominal aneurysms As Nixon (1911) says the symptoms show "a variability hardly surprising when the potentialities of the abdominal aorta and its branches are borne in mind" Some of the possible symptoms are

Pain, although only present at first in one of our cases, is the outstanding symptom Kampmeier (1936) found it in 55 out of 60 cases, and constant boring or aching pain in these subjects was twice as common as intermittent pain The pain was either in the back or abdomen, and periods of added lancinating pains of awful severity were frequent particularly in cases of erosion of the vertebræ (usually D 12 and L 1 and 2) and of pressure on the nerve roots The pain in Nixon's large series in different cases simulated renal colic, gall-bladder disease, and sciatica

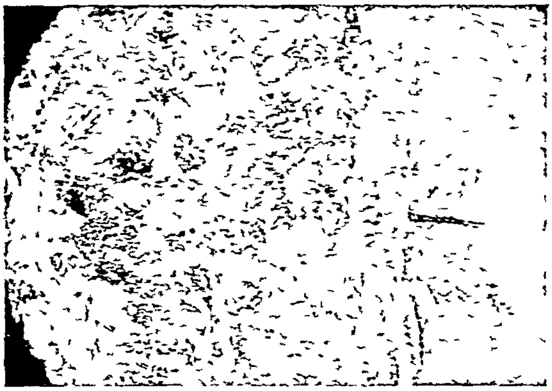

FIG 8—Section through wall of aneurysm in case 3 On extreme left is fringe of hæmorrhage which widely infiltrated both adventitia and media Next there is a perivascular collection of lymphocytes around an adventitial blood-vessel In centre is the media showing fragmentation and small deposits of lymphocytes and plasma cells On right is thickened intima containing lipoid acicular spaces

Pressure on viscera has been reported to result in dysphagia, vomiting, symptoms of pyloric or intestinal obstruction and melæna Symptoms suggestive of peptic ulcer may be followed by hæmatemesis if the aneurysm ruptures into the compressed stomach or duodenum The spinal cord may be compressed to cause paraplegia (Hutton and Galbraith 1938) Uræmia may result from compression of both ureters or by occlusion of the renal artery openings in the walls of the aneurysmal sac (James 1935) Obstructive jaundice has been caused by pressure on the common bile duct (Bryant 1903)

Rupture of the aneurysm, apart from the tearing pain and shock which are its chief features, results in a variety of mistaken diagnoses Thus the more frequent retroperitoneal rupture may simulate perinephric abscess (Rusche and Bacon 1935), psoas abscess and appendix abscess Jump and Leaman (1939) report a case of intraperitoneal rupture diagnosed as a perforated peptic ulcer

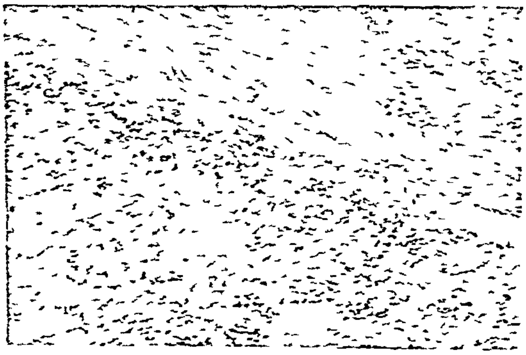

FIG 9—Section through wall of aneurysm in case 4 Patchy infiltration of media with lymphocytes Adventitia thickened and fibrous showing gross infiltration with plasma cells and lymphocytes Small areas of recent hæmorrhage in adventitia

Obstruction of blood-vessels either outside the aneurysm, such as the inferior vena cava, or arising from it, such as the renal and iliac vessels, results respectively in venous congestion of the lower limbs urinary suppression and pain, or weakness or gangrene of the legs (Bryant 1903 Bishop and Trubek 1935)

Where the whole sac has been full of clot it has, like our second case, been diagnosed as a malignant tumour

It is thus not surprising to learn from Osler that Valsalva's case in 1719 was opened by an "unskilful surgeon," or to find that only 18 of Bryant's 54 cases were diagnosed during life In only 8 of these cases was expansile pulsation found, although 33 showed pulsation and 31 had tumours, 26 had a systolic murmur over the tumour

Some diagnostic help may come from radiography of the abdomen A soft-tissue shadow may be seen, but as Farmer (1927) points out, it must have calcified laminæ in its substance to rouse strong suspicion of abdominal aneurysm Better evidence is given by posterior aneurysms which erode the lowest dorsal and upper lumbar vertebræ, or even the transverse processes and the lower ribs on the left side, 18 out of 24 of Kampmeier's cases showed vertebral erosion, 4 of his cases showed a pulsating tumour on the screen and 4 caused gastric displacement

The Wassermann reaction may afford help, but even in syphilitic cases it may be negative

ÆTIOLOGY

The ætiological factors in these aneurysms are syphilis, trauma, arteriosclerosis, tuberculosis rarely (Dafoe 1925), and possibly rheumatism (Nixon) Males are predominantly affected—e g, 90% of Bryant's 54 cases and 84% of Nixon's 179 cases were in men All the writers who have described long series of cases (Nixon, Bryant, Kampmeier and Osler) agree on the predominance of syphilitic cases, and only writers describing a few older cases (McNeely 1937, Jump and Leaman 1939) are impressed by the part played by arteriosclerosis Very many syphilitic cases were under 45

The best examples of the effect of direct trauma in producing abdominal aneurysms are in Valisnieri's case of a cartman with syphilis, over whose abdomen a cartwheel had passed, and in McFadzean's (1928) old trapeze artist In the latter no less than four atheromatous aneurysms were present in the often compressed abdominal aorta, while the thoracic aorta remained healthy Constant heavy manual work by subjects with aortic disease has been a more frequent factor than direct trauma in producing abdominal aneurysms The comparative lack of support of the wall of the branching upper abdominal aorta is said to be responsible for the greater incidence of syphilitic aneurysms in the upper abdomen Such aneurysms are usually saccular, while the arteriosclerotic aneurysms of the lower aorta are often fusiform

Osler thought that abdominal aneurysms were ten times rarer than thoracic aneurysms In Nixon's series 15 cases had both abdominal and thoracic aneurysms, but this association is very rare Hutton and Galbraith (1938) report an interesting case of G P I associated with abdominal aneurysm, and Nixon (1911) a girl of 20 with congenital syphilis who developed an abdominal aneurysm

PROGNOSIS

The short history of all cases described is noteworthy, from diagnosis to death the period was usually less than a year. But as in our first case the history often suggests the development of the aneurysm over a period of a few years Death is nearly always due to rupture and hæmorrhage Retroperitoneal rupture is often gradual and intermittent, intraperitoneal hæmorrhage is much more rapidly fatal, 19 of Bryant's series ruptured retroperitoneally, 12 intraperitoneally, 8 into the pleura, and 2 into the mediastinum, only 2 died vascular deaths with intact aneurysms Hutton and Galbraith's case with an aneurysm history of 11 years died as a result of a paraplegia

SUMMARY

In 4 cases of abdominal aneurysm a syphilitic ætiology was probable in the first two, and possible in the third

The varied symptoms were backache, sciatica, testicular pain, melæna, constipation, abdominal cramps, suppression of urine and symptoms of intestinal obstruction

In the first 3 cases the presence of an expansile pulsating abdominal tumour should have prevented misdiagnosis In the fourth case, one of aneurysm of the cœliac axis, the diagnosis was obscured by the presence of gastric ulcers Spinal X-ray and blood W R examination gave further help in one case only

The course from diagnosis to death by retroperitoneal rupture was 9 days in the first case and about 10 weeks in the second and third

Autopsy showed in each case evidence of previous smaller bleedings and emphasised the liability of the renal tracts to suffer from compression by these aneurysms In 2 cases the aneurysm caused medial displacement of a ureter

Microscopy, while showing in all cases marked cellularity of the vessel coats with thinning of the media and thickening of the intima, only strongly supported a syphilitic diagnosis in the first case In the other 2 aortic cases the picture was too much complicated by arteriosclerotic change to be diagnostic In the cœliac-axis aneurysm the infiltration of the vessel coats by lymphocytes was evidently not a syphilitic phenomenon

I am grateful to Dr J Hamilton-Paterson for his help in the pathological examination of these cases

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PRESERVATION OF
ORGANIC PHOSPHORUS COMPOUNDS IN STORED BLOOD BY GLUCOSE

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In the following investigations, the rôle of glucose in preserving stored erythrocytes has been studied in relation to its possible effects in inhibiting the breakdown of the phosphoric esters of erythrocytes It is well known that phosphorus is concerned in glycolysis A summary of work on this subject, beginning with observations by Rona and Doblin (1911), is given in a paper by Guest (1932) Guest himself shows that in defibrinated blood kept at 37° C sugar decreases steadily for some hours, while inorganic phosphate remains almost stationary When glycolysis ceases because sugar has all been used up, a rapid liberation of inorganic phosphate from the organic phosphate of the erythrocytes occurs Guest shows that if sugar is added to erythrocytes, glycolysis is prolonged and the breakdown of organic phosphates correspondingly delayed In view of this association of phosphate and glucose, it was thought probable that the addition of glucose to blood (a procedure originated by Rouse and Turner in 1916 and adopted by the Medical Research Council during the present war) might inhibit the gradual but continuous breakdown of organic phosphate which takes place during prolonged storage at 4° C Such an inhibition has, in fact, been observed

FIRST INVESTIGATION

Freshly drawn citrated human blood was divided into two samples To one, sufficient glucose (10%) was added to give a final concentration of 1%, to the other, an equivalent amount of normal saline was added The samples were kept at 4° C for 10–14 days and then centrifuged at 3000 r p m for 30 min The supernatant plasma was removed and inorganic phosphorus in cells and plasma measured by the method of Briggs (1922) The pH was measured with the glass electrode after hæmolysing the cells by freezing

It was apparent that glucose caused a marked decrease in the breakdown of organic phosphate In six experiments the amount of organic phosphate liberated in 10–14 days averaged two and a half times as much in the absence of glucose as in its presence A typical result is shown in table I

The difference in inorganic phosphate liberated was not due to increased acidity resulting from the presence of glucose, since the difference in pH between the two cell samples was too small to affect phosphatase activity to a significant extent (Martland, Hansman and Robison 1924)

TABLE I

—	pH cells	Inorganic P (mg %)	
		Cells	Plasma
Cells stored without glucose	7 08	24 1	3 36
Cells stored with glucose	6 95	11 8	2 88

SECOND INVESTIGATION

The influence of glucose on phosphorolysis in cells separated from plasma was next investigated and at the same time the influence of hæmolysis on phosphorolysis was considered

The procedure must be aseptic Fresh citrated blood was centrifuged The supernatant plasma, intermediate layer of leucocytes and upper layer of erythrocytes were all removed with a capillary pipette and the residual cells divided into two parts, A and B Sample B was hæmolysed by repeated freezing and thawing and then A and B were each subdivided into A_1 and a and B_1 and b To samples a and b glucose was added to a final concentration of 1%, the corresponding amounts of saline being added to A_1 and B_1 All four specimens were kept for 10–14 days at 4° C After this time they were well shaken and inorganic phosphate and pH measured

TABLE II

Expt	Cells	Storage (days)	Glucose added (%)	pH cells	Inorganic P (mg %)
1	Unhæmolysed (A_1)	10	0	7 18	20 3
	,, (a)	10	1	7 04	4 8
	Hæmolysed (B_1)	10	0	7 18	17 9
	,, (b)	10	1	7 04	13 6
2	Unhæmolysed (A_1)	14	0	7 19	27 5
	,, (a)	14	1	7 19	2 6
	Hæmolysed (B_1)	14	0	7 19	25 0
	,, (b)	14	1	7 26	23 6

The two examples in table II selected from a number of other experiments show that even in centrifuged erythrocytes, containing only the merest trace of plasma, glucose evokes a striking decrease in phosphorolysis amounting sometimes to almost complete inhibition (experiment 2) On the other hand, hæmolysis of cells brings the inhibiting action of glucose to an end, phosphorolysis being as active in hæmolysed cells with glucose as it is in the absence of glucose Such slight evidence of glucose inhibition as is evident may well be due to the persistence of some intact erythrocytes in the hæmolysed mass

Another observation emerges from these experiments The addition of glucose to stored erythrocytes has little effect on their ultimate pH—usually they are very slightly more acid, sometimes they are less Finally, it may be noted that originally unhæmolysed cells, packed by centrifuging showed less than 0 2% hæmolysis after being kept for 14 days at 4° C

DISCUSSION

The findings here recorded may be explained to some extent by a consideration of the nature of glycolysis and phosphorolysis These are both cellular phenomena in which plasma plays no part The exact course of glycolysis is unknown, but the following simplification of an account by Rapoport and Guest (1938) probably approximates to the truth The chief organic phosphates of human erythrocytes are diphosphoglycerate and adenosine triphosphate the former constituting the bulk of the phosphoric esters The breakdown of diphosphoglycerate yields inorganic phosphate This phosphate combines with glucose to form hexosephosphate which is ultimately reconverted into diphosphoglycerate At some stage in this process adenosine triphosphate is concerned probably donating phosphate to glucose and thus forming hexose phosphate and adenylic acid The latter then accepts more phosphate from inorganic phosphate or diphosphoglycerate to reproduce adenosine triphosphate This cycle is maintained by the enzymic action of phosphatase and in it glucose is used up and disappears, this part of the process constituting glycolysis The conservation of diphosphoglycerate depends on the maintenance of glycolysis and this in turn on the presence of glucose In the circulating blood the supply of glucose is practically unlimited and the re-esterification of inorganic phosphate derived from diphosphoglycerate is probably complete In blood drawn and stored without glucose, the glucose naturally present (about 0 1%) is soon used up The conversion of phosphate into hexosephosphate is no longer possible and so the reconstitution of diphosphoglycerate from inorganic phosphate comes to an end and the diphosphoglycerate progressively breaks down under the action of phosphatase into inorganic phosphate In the case of stored blood to which glucose is added however, the reserve of glucose is so great that the hexose-phosphate cycle can be maintained for a much longer time, diphosphoglycerate is conserved and inorganic phosphate appears in small amounts

The reason why the conservation of phosphoric esters is not apparent in hæmolysed cells may lie in the absence of glycolysis in such a hæmolysed system In the absence of glycolysis, no resynthesis of phosphoric esters occurs That glycolysis is inhibited by hæmolysis has long been known (Rona and Arnheim 1913), it has been suggested that the process of glycolysis is, in some obscure way, associated with the integrity of the cell surface

The inhibition of phosphorolysis by glucose adds one more to the various ways in which glucose aids the preservation of stored erythrocytes, these actions may be summarised as follows —

(1) Glucose delays the breakdown of organic into inorganic phosphates

(2) It helps to maintain the relative impermeability of the erythrocyte to cation In this way the leakage of salts (and hence of water) into the cell is checked, the cell takes longer to swell to its critical "bursting volume" and hæmolysis is delayed

(3) Glucose is probably adsorbed into the actual cell surface, since it has been shown (Maizels and Whittaker 1940) that the critical bursting volume of cells in glucose is 10% greater than that of cells in saline In this way, cells in solutions containing glucose can tolerate a higher content of salts and water without hæmolysis occurring

It cannot be said definitely that the conservation of organic phosphates in erythrocytes necessarily helps cell preservation, there is no evidence, for example, that the accumulation of inorganic phosphate in cells causes any important shift in the pH of the cell although it is possible that the breakdown products of phosphoric esters might have a higher osmotic pressure than that of the original compound from which they were derived If this were the case, then increased hydrolysis of phosphoric esters would raise the osmotic pressure of the erythrocyte and predispose to hæmolysis not only in saline solutions but also under ordinary conditions of storage in plasma Moreover, on general grounds, it is probable that an agent which helps to keep cell chemistry normal will also assist cell preservation and that the maintenance of a normal physiological cycle of metabolism within the erythrocyte should help to sustain its nutrition and to aid survival

CONCLUSION

The addition of glucose to stored blood inhibits the breakdown of organic phosphates It is thought that this may be a factor in aiding the survival of the erythrocytes

My thanks are due to Mr C Pope of the Wellcome Research Institute, who has carried out all the pH determinations on the various blood samples examined

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ESTIMATION OF PROTHROMBIN

By T K Owen, M B , M SC SHEFF , M R C P ASSISTANT PATHOLOGIST, GROUP LABORATORY
M Toohey, M B DUBL , M R C P ASSISTANT MEDICAL OFFICER
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The occurrence of hypoprothrombinæmia with associated hæmorrhagic tendency in jaundice and in the hæmorrhagic disease of the newborn, and its prompt response to vitamin-K therapy, have rendered a simple test for prothrombin estimation highly desirable The method described by Quick (1935) still remains the most suitable owing to its simplicity There is, however, some disagreement concerning the normal prothrombin coagulation-time Quick in his original article gave this as 22 sec , but later (1936) as 11–15 sec Other workers (Illingworth, Kark and Souter, Crosbie and Scarborough, &c) give times of 15–25 sec for normal controls The cause of these variations appears to be the different methods employed in preparing the thromboplastin solutions from brain Quick recommends acetone-dried extracts as the most active and most suitable for storing He mentions the use of aqueous extracts, but does not use them for routine purposes Most other workers have used either acetone-dried or air-dried extracts The method we have adopted obviates the necessity of drying the brain, and thereby greatly simplifies the procedure

A portion of brain is carefully freed of membranes and blood vessels, washed, macerated to a smooth paste in a mortar, and suspended in ten times its weight of saline Either human or rabbit brain may be used The saline suspension is stored in an air-tight screw cap bottle at 4° C Before use it is centrifuged, and the supernatant clear fluid is used in the estimation

We have found that these aqueous extracts give constant coagulation-times for more than a month It is essential to store them in the cold as they quickly deteriorate at room temperature We always have several extracts available, and make use of that which gives a coagulation-time with a normal plasma of 13–15 secs Our results with normal controls, which have been obtained with many different extracts were as follows

No of controls	97	Longest time (sec)	16
Shortest time (sec)	10	Av for group (sec)	13 97

It will be seen that these findings agree with Quick's statements that 11–15 sec may be taken as normal The longer times obtained by other workers may be due to loss of activity in dehydration, or in heating the brain, as recommended by Quick, in order to destroy any prothrombin content of the brain itself By testing with prothrombin-free plasma we have found our extracts to be free of prothrombin Heating the brain extract above 60° C rapidly destroys the activity of the thromboplastin

Recently viper-venom has been recommended as an alternative source of thromboplastin (Fullerton 1940, Hobson and Witts 1940) either with or without the addition of lecithin There seems to us no advantage in this, for the shorter times obtained with venom do not make minor variations from the normal easier to detect Also, as pointed out by Hobson and Witts, different batches of venom give different results Again, viper-venom is expensive while brain may be obtained at no cost from the post-mortem room

ESTIMATION IN INFANTS

The difficulty in prothrombin estimations on infants is to obtain the blood, for if repeated tests are to be made venous (or fontanelle) puncture is not a practical procedure Waddell and Lawson (1940) employed the technique of Bray and Kelly (1940), using blood obtained by heel-puncture, and carrying out the estimation on whole blood As these authors have pointed out, the end-point, using blood instead of plasma, is not sharp, and we have found it difficult to time accurately We therefore devised the following technique for obtaining plasma from heel-puncture

A white cell pipette (largest size available) is filled to the mark " 1 " with M/10 potassium oxalate solution The infant's warmed foot is pricked so as to obtain a free flow of blood It is essential to see that the foot is well warmed, otherwise a free flow will not be obtained The blood is sucked up the pipette to the mark " 11," and the contents of the pipette at once blown into a Dreyer's tube and shaken The whole procedure should be completed within two minutes, otherwise there is danger of the blood in the stem of the pipette clotting This can easily be done with a little practice White cell pipettes usually have a volume of about 0 4 c cm and from this 0 2 c cm of plasma may be obtained For the actual estimation 0 05 c cm of plasma is used and equal amounts of brain extract and M/40 calcium chloride added Using these amounts instead of 0 1 c cm , as in Quick's original method, allows the estimations to be repeated two or three times, and the end point is clearly seen

We would like to thank Dr W Allen Daley, medical officer of health, L C C , for permission to publish this report

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Reviews of Books

Medicolegal Ophthalmology

By Albert C Snell, M D , lecturer in ophthalmology, school of medicine and dentistry, University of Rochester St Louis The C V Mosby Co Pp 312 30*s*

Books of reference on special medical subjects are apt to be written towards the end of a career and therefore to be coloured by the author's particular personal experience in a way which restricts the free use of the text for general reference This treatise deals with the forensic aspects of ophthalmology from the point of view of industrial disability, a subject which attracts many ophthalmologists in practice, but which may find them relatively unprepared for the mathematical exigencies required by the court before which the extent of impairment of sight is assessed Dr Snell deals at length with the percentage evaluation of vision, of visual acuity, and of peripheral vision, and it is in this respect that the book justifies its title There are sections on the practical application of these subjects to medicolegal situations and an important chapter on malingering A book confined to the particular applications of a specialty, whatever its excellence, can be of service to only a handful of the medical public For this reason it seems unnecessary that the author should have given at such length the elementary principles of medical evidence and of ophthalmological practice The expert for whom the book is intended will be well acquainted with both Its value to the specialist who occasionally has to assess vision for civil or industrial compensation claims is, however, undeniable

Synopsis of Obstetrics and Gynæcology

(8th ed) By Aleck W Bourne, M B Camb , F R C S , F R C O G Bristol John Wright and Sons Pp 490 15*s*

For nearly 20 years this volume of a well-known series has helped medical students with their revision and has served practitioners for reference The subject matter is sound and is presented in an unusual but attractive way Mr Bourne recommends the use of 6% carbon dioxide as an adjunct in the treatment of fœtal asphyxia, but in view of recent work on the physiology of respiration, and especially on the respiration of the fœtus and newborn child, this advice might be revised In the section dealing with therapeutic abortion, no reference is made to abdominal hysterotomy The operation deserves mention because in many of the cases in which therapeutic abortion is indicated it is necessary to sterilise the mother at the same time The classification of the different types of dysmenorrhœa might be discarded, in view of our increased knowledge of the causes of this symptom Apart from these three small criticisms the new edition has everything to commend it

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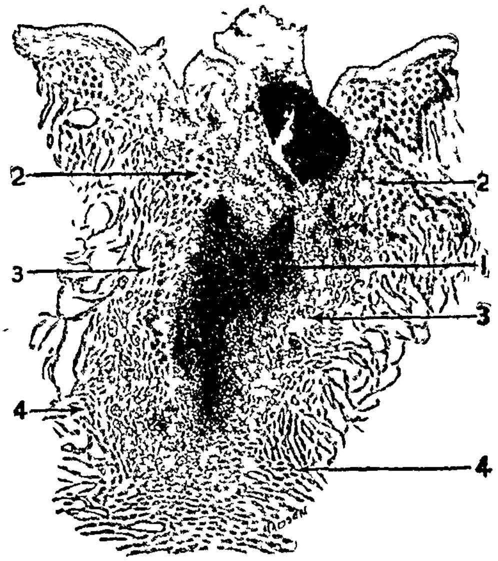

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LONDON SATURDAY JUNE 7, 1941

BLOOD-PRESSURE IN SHOCK

EXPERIENCE with air-raid casualties has shown that the various combinations of injury, fear exposure, hæmorrhage, crushing, burns multiple fractures head wounds and other factors such as delay between injury and treatment, can produce widely different clinical pictures. These call for revision and expansion of the accepted descriptions of what has loosely been termed “shock. Furthermore, our pre-war ideas about shock were largely founded on observations in the restricted age-group of fit young soldiers, whereas the range of clinical material is now much greater. Nowadays the wounded may include the very old and the very young, both sexes those who were previously diseased or in poor health or frail, and those with a mentality neither trained to, nor at all suitable for withstanding the terrors of total war.

The chief means of assessing the severity of shock has long been the blood-pressure. This usually reflects the state of a circulation deranged either temporarily by mental stress or pain (often termed primary shock), or more seriously by gross reduction in blood-volume due to hæmorrhage or plasma loss (often termed secondary shock). As between blood loss and plasma loss the latter is the more serious because of the resulting hæmoconcentration which adds to the circulatory embarrassment. In most cases of wounding an examination that is thorough enough to reveal all sites of injury, combined with clinical observations that include a series of blood-pressure determinations, almost always allows of the separation of those who require transfusion for the restoration of blood-volume from those who will recover with the simple conservative measures of rest, quiet warmth and a sedative. In all cases the serial blood-pressure readings are essential for assessment and for estimating the response to treatment ; they indicate the need for transfusion the sufficiency of transfusion and the failure of transfusion—e g when continuous internal hæmorrhage neutralises the anticipated effect. And yet it is clear from clinical reports that the blood-pressure should not be regarded as either an infallible observation or as the only one that need be made on an injured person exhibiting pallor, cyanosis sweating and the other signs of circulatory embarrassment commonly put down to shock. It is not sufficiently recognised that this train of symptoms and a bewildering number of terminal states can be produced by at least three different mechanisms the first a matter of cardiac nervous control the second arising from circulatory inefficiency due to reduction of blood-volume, and the third representing the terminal stages of tissue dehydration when fluid loss continues and fluid intake is nil. The first of these states can be countered by rest, warmth and a narcotic the second needs the transfusion of a protein fluid (blood, plasma or serum) for a basic treatment, while the third demands adequate hydration with ample fluids by mouth and saline intravenously.

There is therefore need for much clinical judgment in addition to mere observations of blood-pressure for the prescribing of proper treatment for the injured. In general transfusion is undoubtedly required for those casualties whose wounds leave no doubt about the degree of blood loss or for those whose blood-pressure remains low or continues to fall despite conservative treatment. But it does not follow that transfusion is unnecessary where the blood-pressure is not low. In the series reported by KEKWICK and his colleagues,[1] there were cases in which the blood-pressure reading by itself would have been fallacious. Thus the hypertensive may suffer a huge loss of blood and yet have a blood-pressure within the accepted normal limits while the young subject may have so much compensatory vasoconstriction after a large blood loss that for a time, his blood-pressure remains well above the anticipated level. GRANT[2] also describes this last phenomenon and notes how the pulse is barely palpable despite the high—sometimes abnormally high—brachial blood-pressure. A further difficulty has been introduced by the rediscovery of fat-embolism as a result of the many bony injuries of total war. Here the characteristic signs do not usually develop until the second or third day after injury,[3] but the unwary may be trapped into regarding the condition as “delayed shock. The mental state the sweating and the general collapse though the blood-pressure is ordinarily well maintained may easily suggest the advisability of transfusion , but these are cases in which transfusion can hardly be expected to do good, and will probably do harm. GRANT rightly emphasises the urgent need for accurate, detailed and extensive observations with an open mind, on the wealth of clinical material now available, so that we may reformulate our ideas on the reactions of the body to injury and clearly define the clinical groups together with their treatment. One thing at least is certain. Blood-transfusion is not a panacea for all the states produced by injury which are classified as shock.

RESEARCH IN THE E.M.S

EXPERIMENTAL research in times of peace is a steady but slow process. Who cares if the right answer is obtained, that five years have been spent on the work? But in war, time is everything and it is imperative that the right questions, and tight ones at that, should be posed. War presents clinical research workers with unexampled material and the chance of collecting a large body of accurate observations. The acumen of the doctors the resources of the biochemical and pathological laboratories and the instruments of precision are there what is difficult is accurate recording. Early and accurate observations of such conditions as shock and the so-called crush syndrome, the effects of transfusion of protein-containing fluids, and bacteriostatic control of recent wounds are obtained in circumstances which do not allow of leisurely and therefore careful, record by those who must not only observe but also treat. Experience is universal that if there are to be no lacunæ at vital points in the records there must be a clerk—and preferable a short-hand clerk—at hand to take down the notes from dictation. CABUNCUS on another page has pointed out that expert physi-

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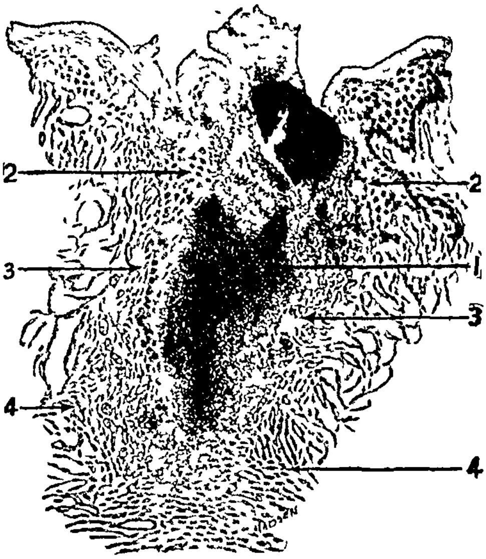

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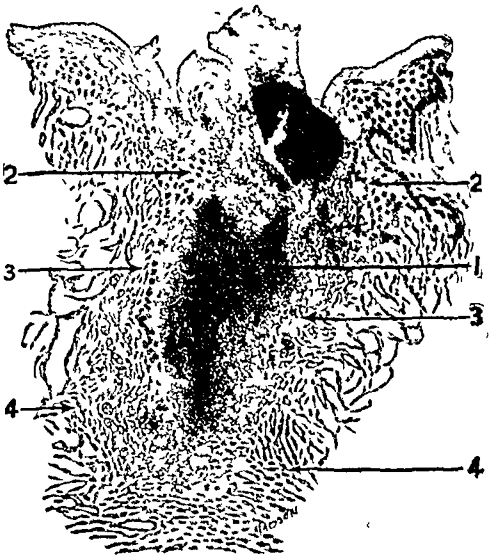

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RESEARCH IN THE E M S

Experimental research in times of peace is a steady but slow process Who cares if the right answer is obtained, that five years have been spent on the work ? But in war, time is everything, and it is imperative that the right questions, and tight ones at that, should be posed War presents clinical research workers with unexampled material and the chance of collecting a large body of accurate observations The acumen of the doctors, the resources of the biochemical and pathological laboratories and the instruments of precision are there what is difficult is accurate recording Early and accurate observations of such conditions as shock and the so-called crush syndrome, the effects of transfusion of protein-containing fluids, and bacteriostatic control of recent wounds, are obtained in circumstances which do not allow of leisurely, and therefore careful, record by those who must not only observe but also treat Experience is universal that if there are to be no lacunæ at vital points in the records there must be a clerk—and preferable a short-hand clerk—at hand to take down the notes from dictation Cabuncus on another page has pointed out that expert physicians and surgeons are wasting time in copying out hundreds of their own case-notes for the perusal of the Ministry of Pensions. Their real clerical duty—that of collecting, assessing and analysing results of treatment—is delayed and hampered, or even ousted by this hackwork, from which any little typist could relieve them. Indeed the collection and study of records is not even regarded as a part of their service—they do it as a labour of love or not at all. Questionnaires sent out from the ministries become a burden in the absence of clerical help; they are thus often imperfectly filled or find a destination in the waste-paper basket. Yet in the Spanish war, where there was close collaboration between the fighting and the medical services, observations on the distribution and character of wounds, and their fatalities, were of great use in determining the value of particular weapons and particular methods of attack and defence; and thus of considerable value for tactics. Information to be obtained from accurate medical observations may influence the design of aircraft armour, and the types of protection to be used for A.A. guns ashore or afloat, and may throw light on the efficiency of parachute troops and many other things. The M.R.C. does provide to the utmost of its ability the clerical as well as the expert help sought. But is it fully aware of its golden opportunity or sufficiently apprehensive of the vain regret which will inevitably come when it may be said 'We had our chance of finding that out and didn't take it'? In the E.M.S. it should be possible to present the case for a corps of clerks, with sufficient proof of immediate utility and of direct life-saving value, to induce the Treasury to countenance the expenditure; but cost, in any case, should not put the scheme out of court. Among the educated women now registering there must be many of independent means or needing little remuneration who could and would do this necessary work well. There must be many rejects among conscripts, in C or D class, who though excluded from active field service would not be debarred from such sedentary work; and there are many conscientious objectors who do not fear danger and would willingly work in hospitals exposed to heavy bombardment. It is not the lazy man who needs a clerk: it is the hard-working man who never thinks of the clock or of the week end; and he needs one, not to give him more leisure, but to spare his ability for work which only he can do.

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[1] Kekwick A Marriott H L , Maycock, W d A and Whitby L E H *Lancet* Jan 25 1941 p 99

[2] Grant, R. T *Guy's Hosp Gaz* April 19 1941, p 90

[3] See Robb Smith A H T *Lancet* Feb 1, 1941 p 135 Rowlands R A and Wakeley, C P G *Ibid*, April 19 1941, p 502

A DIMINISHING MENACE

A REPORT by A. M. KEMAL[1] and his colleagues of the Egyptian ministry of public health on the epidemiology of plague in Egypt serves as a reminder that the disease has long been endemic in that country. When it first reached there is unknown, but the great epidemic in the Roman Empire in the sixth century B.C. is said to have arisen in Egypt. In modern times, however, little was heard of it until the end of the nineteenth century, when infection arrived at the trading ports of Hong-Kong and Canton and was carried by shipping all over the world, reaching Egypt by way of Alexandria. Between 1906 and 1910 more than a thousand cases a year were notified, with a fatality of 58%. Since that time there has been a steady fall, so that in the five years 1936–40 there were only 870 cases, and these largely confined to the Assiut Province on the Upper Nile. The fatality in 1940 was 36.9% for the bubonic type and, as ever, 100% for the septicæmic. In the bubonic cases treatment with sulphapyridine and serum combined held out distinct hopes for the future, there being only 3 deaths among the 37 cases treated in this way.

Plague is normally a disease of rodents, transferred from rodent to rodent by rodent fleas; in default of their normal host, certain rodent fleas may attack man. The position of man is therefore peculiar, in that the disease is invariably acquired by him not by the agency of his own parasites (the human flea) but by that of rodent parasites which normally are unwilling to attack him and only do so when deprived of their own hosts. Only the pneumonic type of the disease spreads from man to man. The chief rodents responsible for human epidemic plague are the grey sewer rat, *Rattus norvegicus*, and the black rat, *R. rattus*. The sewer rat is mainly concerned in the spread of plague epizootics in rodents; from it the black rat becomes infected and, being a close associate of man, passes the disease on to him. When the sewer rats in the basement of a house die of plague, their infected fleas leave them and attach themselves to the black rats; and on the death of these the fleas seek fresh pabulum and attack, among other animals, man. Thus epidemics of plague in man are invariably preceded for 10–14 days by epizootics in black rats, and these by epizootics in grey rats. The finding of rats dead from an unknown cause in endemic areas should thus cause suspicion; and to be forewarned is to be forearmed in this disease.

It has lately been shown that it is not domestic rats alone which are responsible for the maintenance and dissemination of plague. A considerable number of wild rodents in various parts of the world have been found to spread it. These rodents, most of them living in rural or desert places, maintain infection and through their agency and that of their fleas plague may pass across wide tracts of country without coming into contact with man or his attendant rats. Thus plague in a town may spread to the rural rodent population and pass through it over vast tracts of country to reappear in the rat population of another town and thence in man. Trappers and others handling such rodents in the pursuit of furs or food may acquire the disease from them. This type of plague is known as "selvatic"* plague, and constitutes a serious problem in the control of the disease. But however susceptible rats may be, the disease does not necessarily persist in a rat population. If it appears among a moderate-sized rat population early in the plague season a complete outbreak occurs, and the infection then disappears because the surviving rats become so few and so scattered that their infection by fleas becomes impossible. But mere diminution in numbers is not the only factor curtailing rat epizootics. A strain of rats comparatively resistant to infection may be bred out by a process of natural selection, the susceptible rats dying and the insusceptible surviving and multiplying. This possibly accounts for the disappearance of the disease from certain islands, such as Mauritius

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[1] J. Egypt. publ. Hlth Ass. January, 1941.

* From the Portuguese word *selva*, a wood or forest, and applied to the wooded plains of the Amazon basin.

Here plague was introduced from India; became endemic and periodically epidemic for many years, and then unexpectedly entirely disappeared in 1927 and has not been encountered since The influence of climate on plague is substantial, and a high saturation deficiency and high temperature have an adverse effect mainly on the fleas and to a lesser extent on the rats themselves The best climatic conditions for plague are temperatures between 68° and 78° F and a saturation deficiency of under 0 3 in , under such conditions the rat flea can flourish and its power to transmit the infection is greatest The time of survival of an infected and " blocked ' flea—that is, a flea in which stomach and œsophagus are blocked with blood-clot containing *Bacillus pestis*—is reduced under dry hot conditions and the virulence and number of the plague bacilli in its stomach are also adversely affected It is thus apparent that the problem of plague is unlikely to attain any prominence in the deserts where our troops are active just now Plague occurs and will continue to occur in the cities of the Near East and of the Nile delta but it is well under control To a disciplined mobile population it should not constitute a menace

WORKERS IN THE CARDROOM

HOWEVER forbidding the word byssinosis may be the law now recognises it and we must do the same, for the Workmen's Compensation and Benefit (Byssinosis) Act which was passed last November[1] came into force on May 1, and a board has been set up under the chairmanship of Judge E C BURGIS to administer its provisions Byssinosis derives from the Greek word for linen which gives us also byssus for fine flax As a term for the respiratory disease produced by the inhalation of cotton particles it has been current[2] since 1902, and it was accepted as a distinctive name in 1937 by the departmental committee of the Home Office appointed to report on compensation for cardroom workers, but as we pointed out when the bill was passed[3] the only justification of this replacement of the known by the unknown seems to lie in the fact that it widens the scope of the act, for the disease affects operatives in other parts of the cotton mill and also flax hecklers The disease itself, under the name of " stripper's asthma," was first described (see p 744) in our columns some eighty years ago by JESSE LEACH, a certifying surgeon under the Factories Act in Heywood mills He noted that it was a chronic condition of the lungs, the main symptoms being spasmodic cough, tightness in breathing and asthma, and attributed it to the patient's inhalation of dust while cleaning raw cotton in the early stages of spinning Strippers, grinders, blowing-room operatives, cotton mixers and other cardroom workers are subject to it, whether they are handling high-grade Egyptian or lower grade cottons

Cotton arrives at a mill in tightly compressed bales weighing 500–750 lb It contains dirt, sand, seeds, bits of leaf and other foreign material which must all be removed before it is spun The bales are opened, the mass of cotton broken up, and the foreign matter removed by various machines These processes fill the air with dust in the cardrooms and blowing-rooms where they are carried out The cotton is now in a wide lap or mat, its fibres lying in all directions , the next step is to card or comb, them into line and to remove broken ends and any foreign particles still left among them This is done by passing the laps between a cylinder and bars of metal, technically known as flats , both cylinder and flats are covered with steel needles, ¼ in long, bent forward in the direction in which the cylinder moves as it combs the cotton There are several hundred points to the square inch, and the cylinder and flats become so heavily clogged with waste matter that they have to be cleaned two or three times a day For this purpose a revolving brush set with similar metal teeth is generally used , it is often covered by a hood connected either to a fan or a pump to suck the dust away Some mills now use a vacuum stripper which keeps down dust much more effectively than a brush, even one fitted with a hood and suction apparatus At intervals of a few weeks the teeth on the cylinder and flats become blunted and have to be sharpened with an emery or carborundum wheel , and grinders, like strippers, may acquire cardroom asthma The dirtier the cotton the greater the liability of workers to the disease Modern appliances for carrying away dust by suction have greatly improved working conditions, however, and some firms are now installing cylinders fitted with special wire which needs neither stripping nor grinding There is thus every hope that cases will in time diminish in number or even disappear

In the meantime men are still being unnecessarily crippled The usual history is that after working for many years an operative develops a slight cough, which gradually becomes dry or very irritating , this may be accompanied by attacks of breathlessness and shallow breathing, as a rule on Mondays During the rest of the week the man feels fairly well and for a long time his trouble may be limited to this " Monday fever " , gradually, however, symptoms are experienced later and later in the week, and in time he is wholly incapacitated for work Breathing becomes laborious and chest deformities follow, the sternum projecting forward and the chest becoming barrel-shaped The extraordinary muscles of respiration are called into play and the man stands pressing his hands against his thighs to aid his breathing He loses flesh and his complexion becomes sallow , after long exhausting bouts of coughing he brings up small quantities of sticky glairy sputum When examined he has signs of chronic bronchitis and emphysema The Monday attacks may be due to the physical—and possibly also the psychological—effect of resuming work in dusty air after spending much of the week-end out of doors, breathing naturally and deeply The man tends to go on breathing deeply on returning to the mill on Monday and thus inhales relatively large quantities of irritating dust until his symptomatic shallow breathing is resumed A few weeks or months away from work may make him feel comparatively fit, but the day he comes back to the mill breathlessness recurs and he may hardly be able to get home unaided Some patients complain of breathlessness as the only symptom , others are troubled by the intensely irritating cough with at first little, later much, sputum Adequate masks could, of course, prevent the disease completely, and the Mark IV dust respirator prevents the inhalation cians and surgeons are wasting time in copying out hundreds of their own case-notes for the perusal of the Ministry of Pensions. Their real clerical duty—that of collecting, assessing and analysing results of treatment—is delayed and hampered, or even ousted by this hackwork, from which any little typist could relieve them. Indeed the collection and study of records is not even regarded as a part of their service—they do it as a labour of love or not at all. Questionnaires sent out from the ministries become a burden in the absence of clerical help, they are thus often imperfectly filled or find a destination in the waste-paper basket. Yet in the Spanish war, where there was close collaboration between the fighting and the medical services, observations on the distribution and character of wounds, and their fatalities, were of great use in determining the value of particular weapons and particular methods of attack and defence, and thus of considerable value for tactics. Information to be obtained from accurate medical observations may influence the design of aircraft armour, and the types of protection to be used for A.A. guns ashore or afloat, and may throw light on the efficiency of parachute troops and many other things. The M.R.C. does provide to the utmost of its ability the clerical as well as the expert help sought. But is it fully aware of its golden opportunity or sufficiently apprehensive of the vain regret which will inevitably come when it may be said: We had our chance of finding that out and didn't take it? In the E.M.S. it should be possible to present the case for a corps of clerks, with sufficient proof of immediate utility and of direct life-saving value, to induce the Treasury to countenance the expenditure, but cost, in any case, should not put the scheme out of court. Among the educated women now registering there must be many of independent means or needing little remuneration who could and would do this necessary work well. There must be many rejects among conscripts, in C or D class, who though excluded from active field service would not be debarred from such sedentary work, and there are many conscientious objectors who do not fear danger and would willingly work in hospitals exposed to heavy bombardment. It is not the lazy man who needs a clerk: it is the hard-working man who never thinks of the clock or of the week end, and he needs one, not to give him more leisure, but to spare his ability for work which only he can do.

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[1] See *Lancet*, 1940, 2 700 [2] Oliver T Dangerous Trades 1902 [3] *Lancet*, 1940 2 687

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Special Articles

THE MILLING ASPECTS OF FORTIFIED FLOUR

BY

D W KENT-JONES
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MANY special types of flour are produced—such as Hovis, which makes a bread containing a high proportion of the germ of wheat similar kinds such as Daren and Vitbe, special brown flours such as Turog and gluten-enriched products like Procea But it can be stated broadly that millers make two main types of flour—the normal white flour of commerce which constitutes most of their output, and brown flour approximating to wholemeal There is also the newly introduced national (85%) flour which has much to be said for it from a nutritional aspect Rightly or wrongly however the main demand of the public is for bread made from white flour The chief criticism which can be levelled against white bread is its comparative lack of vitamins and particularly of vitamin B_1, and this is what the Government will correct in its fortified loaf

ADDITION OF ANEURINE

Thanks to the practical commercial and financial help of the milling industry it will be possible to add vitamin B_1 to the diet without interfering with the preference of the public for white bread There is no longer any mystery about vitamin B_1 it is 2-methyl-4-amino-5 amino-methyl pyrimidine coupled with 4-methyl-5 hydroxyethyl-thiazole This compound, known as aneurine in England and as thiamin in the United States, being made synthetically in the form of the hydro-hloride salt which is identical with and has the same iological activity as the natural vitamin

The Government scheme involves the enrichment of ach sack (280 lb) of white flour with 0 2 g of this ynthetic vitamin B_1 The uniform mixing in of 0 2 g pproximately 1/140 oz) of a material into over 26 000 g of flour requires care A method has been volved whereby a concentrate of the vitamin can eventu-lly be mixed in at the rate of 1 oz per sack The oncentrate is made by dissolving 1 oz of aneurine in ater and mixing the solution with a thin batter made by tirring 140 lb of flour with water This mixture is pray dried and the dried product can be incorporated t the rate of 1 oz per sack to give the necessary 1/140 z. of the vitamin per sack Many millers are accustomed o mixing powders into flour at the rate of 1 oz per sack, ut not all mills have the necessary exact mixers to do his and it may well be that lack of suitable mixers may rove a temporary bottle-neck In view of the delay hich has already occurred in the production of the neurine, it is hoped that the Government will ensure that a satisfactory supply of suitable and accurate mixers is readily available

Some authorities do not accept with equanimity the proposed addition of aneurine to white flour pointing out that the milling process removes the vitamin naturally present and that this has to be expensively replaced by the synthetic product The other addition involved in the fortification of flour—chalk—cannot be criticised on similar grounds , it is not a replacement of something that was initially present in the wheat and which has been lost in the process of manufacture

ADDITION OF CHALK

It is proposed to add 8 oz of chalk (creta præparata) per sack and this presents no technical difficulties for the miller But opinion is not unanimous that additional calcium is wanted in the diet or that it is best supplied by the addition of chalk and it is only natural that millers have not shown much enthusiasm over the suggested addition , it savours too much of the sand-in-sugar business Two other aspects call for particular attention In hot weather bread sometimes develops an unpleasant disease known as “ rope ” owing to the rapid multiplication in the loaf of bacteria of the mesentericus group Fortunately the presence of acid checks the activity of the causative bacteria and so the trouble can usually be quickly controlled by the inclusion in the dough of vinegar or acid calcium phosphate But if the flour is to contain an additional 8 oz of chalk the bread is likely to be less acid than usual and the danger of rope developing may be considerably increased We are not suggesting that this point has been overlooked by those responsible for advising the Ministry of Food; indeed it is rumoured that bread made from flour containing 8 oz per sack of chalk has been experimentally inoculated with *Bacillus mesentericus vulgatus* and that the Ministry is satisfied that there is no danger of rope We have had considerable practical experience of rope in bakehouses however and are far from happy it is hard to produce experimental rope in the laboratory and extremely hard to avoid it under some conditions in commercial practice It is a pity that this calcium addition, if essential is not to be made in the form of acid calcium phosphate which is helpful in bread manufacture and is actually used as an inhibitor of rope

Moreover there is some evidence that the addition of calcium carbonate may result in the destruction of some of the aneurine during the baking process The thiochrome test for vitamin B_1 when performed by experienced operators gives some idea of the loss of this vitamin in baking With ordinary white bread the loss is probably under 10% with brown bread, because it has rather a less acid balance the destruction is a little higher probably in the region of 10–15% , when calcium is added this destruction is again increased, amounting in some cases to over 20% loss Thus the addition of calcium carbonate to flour while presenting no practical difficulty to the miller, is not quite such a straightforward and obvious step as might be thought

FORTIFIED FLOUR IN AMERICA

In the United States a different plan is contemplated Fortification or “ enrichment ” is not to be compulsory, but if flour has such additions it must be labelled “ enriched,” and enriched flour must conform to the following specification

Each pound of flour must contain “ not less than 1 66 mg and not more than 2 5 mg of vitamin B_1 ’ (that is, 0 47–0 7 of aneurine per sack of 280 lb , a considerably higher quantity than that contemplated in this country) ‘ not less than 1 2 mg and not more than 1 8 mg of riboflavin ’ (where this is coming from is not stated), “ not less than 6 mg and not more than 9 mg of nicotinic acid or nicotinic acid amide, and not less than 6 mg and not more than 24 mg of iron ” These are essentials, but there are the following optional additions ‘ Vitamin D may be added in such quantity that each pound of the finished enriched flour contains not less than 250 U S P units and not more than 1000 U S P units of vitamin D Calcium may be added in such quantity that each pound of the finished enriched flour contains not less than 500 mg and not more than 2000 mg of calcium, except that it may be acidified with monocalcium phosphate irrespective of the minimum limit for calcium herein specified It may contain not more than 5% by weight of wheat germ or partly defatted wheat germ ’

This presents a complex and difficult problem for all concerned particularly the miller and the cereal chemist ; and most people will be relieved that so far at any rate, the authorities in England have not followed up “ fortification ” with the same enthusiasm

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NEW ZEALAND

OBSTETRICS AND GYNÆCOLOGY

PROGRESS is being made towards the establishment of a postgraduate teaching hospital and clinical research centre for the Dominion in obstetrics and gynæcology The New Zealand Obstetrical and Gynæcological Society (under the New Zealand branch of the British Medical Association) already has a major achievement to its credit the endowment of the chair of obstetrics and gynæcology in Otago University in 1930 The indefatigable secretary, Dr Doris Gordon is again stoking the furnaces A conference was held in Wellington in December last at which the society, the B M A the Health Department, the Auckland Hospital Board, New Zealand University Auckland University College and came into force, any wholesale restriction in available vitamin C would certainly lead to infantile scurvy It is fortunate that in the blackcurrant we have a valuable alternative to the orange, and both puree and juice should prove useful In view of the limited quantity of blackcurrants available the Ministry of Food proposes that a large part of the crop should be used for making such preparations for children, and the Ministry of Health has given the proposal its blessing

THIS TRIFLE, WAR

Whatever its drawbacks, total war is not open to the same eugenic objections as the old fashioned kind It has been said of wars in the past that they destroy the cream of the young manhood of a generation , and that the best germ plasm is thus irrevocably lost, to the lasting detriment of the race To see men in terms of germ-plasm savours, perhaps, of the biologist's fancy that the hen is merely a device for producing more eggs , but the argument is disturbing for all that To know that this dysgenic effect is reduced, because the risk is more evenly distributed, is a minor consolation of this war Raymond Pearl, however, held [3] that no war had so far occurred in the nineteenth or twentieth century which had had any measurable genetic effect on the nations involved This seems incredible until his figures are studied He pointed out that wars, nowadays, last only a short time in comparison with the span of human life , and more fighters return than are killed They return in the prime of life, capable even if maimed of founding healthy families , and most of them do In the last war those killed formed a startlingly small fraction of the total population He estimated that the loss to the American race was only 0 055% of the 1910 population, or 0 048% of the 1920 population, and thought it unlikely that any geneticist would regard five one-hundredths of 1% as a significant loss from the total gene pool of the population The comparable figure for France was, of course, much higher, lying, he calculated, somewhere between 1 4 and 3 4% of the population , yet even so it could have had no measurable effect on the quality of the French race These figures are worth remembering at the present time, when pressure of war spoils the sense of proportion Nor is it merely on genetic grounds that they are cheering , they remind that, at worst, wars are minor interruptions of our evolution and that we have a good chance of growing out of them

ECONOMY IN SPIRIT

The Government is anxious that as little alcohol as possible should be used for medicinal and surgical purposes The amount so used at present is said to be " colossal " So far the only direct official intimation of the need to go slow with spirit is contained in the M R C War Memorandum No 3, which says that aqueous solutions of iodine and other antiseptics should be substituted for alcoholic solutions of iodine " owing to the shortage of alcohol " and notes against the item " alcohol " that " many tinctures can be replaced by concentrated preparations, economy is essential " What is said about the need for economy in medicines applies equally to spirit used in surgery and nursing, and no doubt a pronouncement will be made before long from this aspect Much of the large amount of spirit used in sterilising instruments could be saved When dry heat can be applied conveniently it is the perfect means of sterilising instruments made only of steel or glass If dry heat is not available most instruments can be sterilised by boiling immediately before use Boiling for two minutes is sufficient unless the presence of spores is suspected, as after operations for gas gangrene when the boiling should be continued for fully five minutes The old belief that boiling blunts the edges of surgical knives has been shown to have little foundation, but knife edges must be protected from mechanical damage during boiling Syringe needles should be boiled in a weak solution of sodium carbonate for five minutes, this process is lethal to all types of bacteria including spores Where instruments must be ready for use they should not be stored in spirit if it can be avoided but should be sterilised by other means and kept dry in covered sterile receptacles or in sterile towels Alternatively most instruments can be stored in an aqueous antiseptic solution to which borax is added to prevent the steel rusting In hospitals where this method is employed it is found that steel instruments are free from rust after being kept in the solution for a week or more This method is not suitable for hypodermic syringes and needles, but the quantity of spirit required in such cases is small As a general rule, however, syringes and needles, if of rustless steel, should be kept dry after boiling Thermometers and other glass instruments can be kept in a 1% solution of sodium hypochlorite If spirit is used at all for drying the surgeon's hands it should be applied economically by means of a dropper or spray, but this use can be avoided altogether if after washing with soap and water for three minutes the hands are dried on a sterile towel before the gloves are put on An appreciable quantity of spirit is used in swabbing the suture line when stitches are removed after clean operations, and here it can well be replaced by an antiseptic solution, such as liquor antisepticus N F , or a dusting of sulphanilamide powder In preparing the patient's skin for operation tincture of iodine can be discarded in favour of washing with soap and water, drying, and painting with a watery solution of iodine or an antiseptic dye The use of methylated spirit for treating the backs of patients in bed should be restricted to a comparatively small number of clinical conditions such as the neurological diseases in which bedsores are likely to develop In other cases a dusting powder will as a rule be enough, though for dry skins this may have to be supplemented by gentle massage with a zinc oxide and castor-oil cream Clearly, then, a great deal of economy could be effected without risk to the patient or much extra trouble for his attendants This seems to be an opportunity for detailed instructions to the staffs of Service and E M S hospitals

Mr **Winston Churchill** has become a fellow of the Royal Society under a special statute which provides for the admission of persons whose election would be of signal benefit to their fellowship The award of two foreign memberships links the society still more closely to the Rockefeller Institute of New York Dr **James Conant**, a distinguished Harvard biochemist, now president of the university, is on the scientific board of the institute Dr **Karl Landsteiner**, formerly in Vienna, joined the staff of the institute in 1922, and in 1930 was awarded the Nobel prize in medicine for his differentiation of human blood-groups The last war showed the practical importance of his work, and today we are more than ever aware of our debt to him

Lord Moyne, Secretary of State for the Colonies, has announced that a committee under the chairmanship of Mr G H Hall, parliamentary secretary to the Colonial Office, is to be appointed to examine a plan for the establishment in London of a tropical diseases hospital and centre where clinical research and training, including *the training* of women in tropical nursing, will be carried out

Society for Relief of Widows and Orphans of Medical Men —At the annual general meeting of this society, held on May 28 with Sir William Willcox in the chair, it was reported that during 1940 a sum of £4642 10*s* had been distributed to 61 widows and 3 orphans Enemy action had compelled 4 widows to vacate their homes The total membership of the society is now 289, of whom 160 are life members Membership is open to any registered medical practitioner who at the time of his election is resident within a twenty mile radius of Charing Cross Particulars from the secretary at 11, Chandos Street, W 1

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[3] *Amer J Sociol* January, 1941, p 487

Special Articles

THE MILLING ASPECTS OF FORTIFIED FLOUR

BY
D W KENT-JONES
PH D , F I C
A J AMOS,
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MANY special types of flour are produced—such as Hovis, which makes a bread containing a high proportion of the germ of wheat, similar kinds such as Daren and Vitbe, special brown flours such as Turog, and gluten-enriched products like Procea But it can be stated broadly that millers make two main types of flour—the normal white flour of commerce which constitutes most of their output, and brown flour approximating to wholemeal There is also the newly introduced national (85%) flour which has much to be said for it from a nutritional aspect Rightly or wrongly however, the main demand of the public is for bread made from white flour The chief criticism which can be levelled against white bread is its comparative lack of vitamins, and particularly of vitamin B_1, and this is what the Government will correct in its fortified loaf

ADDITION OF ANEURINE

Thanks to the practical commercial and financial help of the milling industry it will be possible to add vitamin B_1 to the diet without interfering with the preference of the public for white bread There is no longer any mystery about vitamin B_1 it is 2-methyl-4-amino-5 amino-methyl pyrimidine coupled with 4-methyl-5 hydroxyethyl-thiazole This compound, known as aneurine in England and as thiamin in the United States, is being made synthetically in the form of the hydrochloride salt, which is identical with and has the same biological activity as the natural vitamin

The Government scheme involves the enrichment of each sack (280 lb) of white flour with 0 2 g of this synthetic vitamin B_1 The uniform mixing in of 0 2 g (approximately 1/140 oz) of a material into over 126,000 g of flour requires care A method has been evolved whereby a concentrate of the vitamin can eventually be mixed in at the rate of 1 oz per sack The concentrate is made by dissolving 1 oz of aneurine in water and mixing the solution with a thin batter made by stirring 140 lb of flour with water This mixture is spray dried, and the dried product can be incorporated at the rate of 1 oz per sack to give the necessary 1/140 oz of the vitamin per sack Many millers are accustomed to mixing powders into flour at the rate of 1 oz per sack, but not all mills have the necessary exact mixers to do this, and it may well be that lack of suitable mixers may prove a temporary bottle-neck In view of the delay which has already occurred in the production of the aneurine, it is hoped that the Government will ensure that a satisfactory supply of suitable and accurate mixers is readily available

Some authorities do not accept with equanimity the proposed addition of aneurine to white flour, pointing out that the milling process removes the vitamin naturally present and that this has to be expensively replaced by the synthetic product The other addition involved in the fortification of flour—chalk—cannot be criticised on similar grounds , it is not a replacement of something that was initially present in the wheat and which has been lost in the process of manufacture

ADDITION OF CHALK

It is proposed to add 8 oz of chalk (creta præparata) per sack and this presents no technical difficulties for the miller But opinion is not unanimous that additional calcium is wanted in the diet or that it is best supplied by the addition of chalk, and it is only natural that millers have not shown much enthusiasm over the suggested addition , it savours too much of the sand-in-sugar business Two other aspects call for particular attention In hot weather bread sometimes develops an unpleasant disease known as " rope " owing to the rapid multiplication in the loaf of bacteria of the mesentericus group Fortunately the presence of acid checks the activity of the causative bacteria and so the trouble can usually be quickly controlled by the inclusion in the dough of vinegar or acid calcium phosphate But if the flour is to contain an additional 8 oz of chalk the bread is likely to be less acid than usual and the danger of rope developing may be considerably increased We are not suggesting that this point has been overlooked by those responsible for advising the Ministry of Food , indeed it is rumoured that bread made from flour containing 8 oz per sack of chalk has been experimentally inoculated with *Bacillus mesentericus vulgatus* and that the Ministry is satisfied that there is no danger of rope We have had considerable practical experience of rope in bakehouses, however, and are far from happy , it is hard to produce experimental rope in the laboratory and extremely hard to avoid it under some conditions in commercial practice It is a pity that this calcium addition, if essential, is not to be made in the form of acid calcium phosphate, which is helpful in bread manufacture and is actually used as an inhibitor of rope

Moreover, there is some evidence that the addition of calcium carbonate may result in the destruction of some of the aneurine during the baking process The thiochrome test for vitamin B_1, when performed by experienced operators gives some idea of the loss of this vitamin in baking With ordinary white bread the loss is probably under 10% , with brown bread, because it has rather a less acid balance the destruction is a little higher probably in the region of 10–15% , when calcium is added this destruction is again increased, amounting in some cases to over 20% loss Thus the addition of calcium carbonate to flour, while presenting no practical difficulty to the miller, is not quite such a straightforward and obvious step as might be thought

FORTIFIED FLOUR IN AMERICA

In the United States a different plan is contemplated Fortification or " enrichment " is *not* to be compulsory, but if flour has such additions it must be labelled " enriched," and enriched flour must conform to the following specification

Each pound of flour must contain " not less than 1 66 mg and not more than 2 5 mg of vitamin B_1 " (that is, 0 47–0 7 of aneurine per sack of 280 lb , a considerably higher quantity than that contemplated in this country), " not less than 1 2 mg and not more than 1 8 mg of riboflavin " (where this is coming from is not stated), " not less than 6 mg and not more than 9 mg of nicotinic acid or nicotinic acid amide, and not less than 6 mg and not more than 24 mg of iron " These are essentials, but there are the following optional additions " Vitamin D may be added in such quantity that each pound of the finished enriched flour contains not less than 250 U S P units and not more than 1000 U S P units of vitamin D Calcium may be added in such quantity that each pound of the finished enriched flour contains not less than 500 mg and not more than 2000 mg of calcium, except that it may be acidified with monocalcium phosphate irrespective of the minimum limit for calcium herein specified It may contain not more than 5% by weight of wheat germ or partly defatted wheat germ "

This presents a complex and difficult problem for all concerned, particularly the miller and the cereal chemist , and most people will be relieved that, so far at any rate, the authorities in England have not followed up " fortification " with the same enthusiasm

NEW ZEALAND

OBSTETRICS AND GYNÆCOLOGY

PROGRESS is being made towards the establishment of a postgraduate teaching hospital and clinical research centre for the Dominion in obstetrics and gynæcology The New Zealand Obstetrical and Gynæcological Society (under the New Zealand branch of the British Medical Association) already has a major achievement to its credit the endowment of the chair of obstetrics and gynæcology in Otago University in 1930 The indefatigable secretary, Dr Doris Gordon, is again stoking the furnaces A conference was held in Wellington in December last at which the society, the B M A , the Health Department, the Auckland Hospital Board, New Zealand University, Auckland University College, and many women's organisations were represented. It was agreed that Auckland was the best locus for the proposed hospital centre. At the annual meeting of the society in Auckland this March, the project was carried a step further, and all the local bodies concerned warmly promised cooperation. Negotiations are now in progress with the Health Department. The appointment of a special director of the hospital is foreshadowed, and a strong university element will be in control of the medical side of the hospital. This would represent a new and welcome advance in hospital affairs in Auckland.

SOCIAL SECURITY AND MEDICAL BENEFITS

The clash between the government and the B.M.A. has been heightened in the last few weeks. Only a minority of doctors—about 50 out of 600—are reported to be accepting patients under the social security scheme; many of these 50 practice in country districts. Mr. A. H. Nordmeyer, minister of health maintains that in time the doctors will come in, and advises the people, especially trade unionists, to demand that doctors take up the scheme. Latterly he has suggested that coercion of the doctors is possible and may need to be resorted to. The B.M.A. spokesmen continue to fling denials at the government, chiefly on the ground that it would be impossible to work the scheme with the present depleted medical personnel. There is no evidence that other and possibly better methods of reorganising medical practice are being investigated.

GENERAL MEDICAL COUNCIL

PRESIDENTIAL ADDRESS

OPENING on Tuesday May 27, the 153rd session of the council Mr. H. L. EASON alluded to the enemy action which had subjected the usual arrangements for the session to a measure of disturbance. The material loss was much less than might have been expected in the circumstances. To our neighbours the Royal Institute of British Architects, he added, we are deeply indebted for the hospitality extended not only to the council but also to its officers and those of the Dental Board. He spoke of the death, since last meeting, of Prof. Robert Howden, who represented the University of Durham 1918–28, and of the illness of the late president, Sir Norman Walker, who had found it necessary to resign his seat as direct representative for Scotland. The translation of Prof. C. G. Lowry to take the place of the late Colonel Thomas Sinclair as Crown nominee for Ireland rendered vacant the representation of Queen's University, Belfast.

RESERVATION OF MEDICAL STUDENTS

In the last war, said the President, the calling up of junior medical students under the successive systems of recruiting gave the council some anxiety, since it promised seriously to affect the supply of newly qualified practitioners in future years. Fortunately in this war the Government have been alive to the necessity of maintaining an adequate supply of medical practitioners, not necessarily for combatant service, but with the longer view of providing for the maintenance of the essential health services of the country in the years immediately following the war. The council will therefore note with satisfaction that in the schedule of reserved occupations as revised in April it is provided that all persons who have been admitted, or duly accepted for admission, as students by recognised medical schools shall be reserved. It is, however, a condition of their reservation that, except in the clinical years, they shall join a senior officers' training corps or an air training squadron, or undertake some alternative form of national service approved by the university authorities, and that their reservation is subject to periodical certification of satisfactory progress in their studies. Medical schools are also to undertake not to admit in ordinary circumstances a quota of students higher than the average entry for the three years preceding the war. It will be possible, therefore, to maintain the supply of medical practitioners at its normal level.

REPLENISHMENT OF THE REGISTER

Meanwhile the Medical Register for 1941 shows that there were 1319 more registered medical practitioners at the end of 1940 than there were at the end of 1939. The number of persons added by registration to the register was 584 less in 1940 than in 1939, but this reduction was primarily due to a fall of 410 in the number of registrations in the Colonial and Foreign lists. The rising tempo of the war is causing a steadily increasing demand for the services of medical men in the Forces, with a corresponding drain upon the supply of practitioners for the needs of the civilian population. With the object of using to the best advantage the professional services of volunteers from the Empire outside the United Kingdom, or from allied or friendly countries, and of friendly refugees from enemy countries, a new order in council, the Medical Register (Temporary Registration) Order, 1941, has been made since the last meeting of this council. Under Defence Regulation 32B and this order the council may register temporarily in the Colonial or Foreign lists of the register practitioners from the following territories:—

(1) The several states and territories of the Commonwealth of Australia, Burma, the several provinces of the Dominion of Canada (to which the Order of 1940 also applied), India, Newfoundland, New Zealand, and the several provinces and territories of the Union of South Africa.

(2) H.M. colonies, protectorates and mandated territories.

(3) Belgium, Czecho Slovakia, France, Greece, Holland, Norway and Poland; and

(4) Germany and Italy.

The prescribed conditions for registration under this order are:—

(a) That the applicant is of good character;

(b) That he holds a medical diploma or diplomas, which in any case where he proposes to engage in approved civil employment must be recognised for the time being by the council for the purposes of the order as furnishing a sufficient guarantee of the possession of the requisite knowledge and skill for the efficient practice of medicine, surgery, and midwifery;

(c) That he (i) is, or has been selected to serve as, a medical officer holding commissioned or comparable rank in one of the Armed Forces of the Crown or in an Allied or Associated Force; or (ii) is employed, or has been selected for employment, as a medical officer in a hospital, or other institution or service not involving medical attendance on patients in their own homes, which for the time being is approved by the Minister of Health (or in Scotland and Ireland a Secretary of State) for the purposes of the order.

At the end of last week the number registered for the period of the present emergency by virtue of Imperial qualifications granted outside the United Kingdom (which the law obliges us to describe as colonial practitioners) was 44, by virtue of qualifications granted in the United States of America or in Continental countries was 250, of whom 20 were serving in the Forces and 230 were in civil employment.

AMERICAN CONTACTS

More recently Mr. Roosevelt, in response to a telegram sent to the American Red Cross of which he is president, has appealed for 1000 young American doctors to volunteer for professional service either in the Armed Forces of the Crown or in the civilian emergency medical service. As far as my information goes, there has already been a splendid response to this appeal. In the selection of suitable applicants the American Red Cross will have the cooperation of the division of medical sciences of the National Research Council, the American Medical Association, the American College of Physicians, and the American College of Surgeons, to which bodies the qualifications of applicants will be submitted. In view of the evident care with which the credentials of applicants will be investigated it would appear that no difficulty should arise in recognising the diplomas of the selected practitioners as furnishing a sufficient guarantee of the possession of the requisite knowledge and skill for the efficient practice of medicine, surgery, and midwifery.

Another instance of the sympathy of the United States with the difficulties which may beset medical students in schools which have been damaged in air-raids is the offer of the Rockefeller Foundation to provide a two years' course of clinical instruction free of cost in medical schools of repute in the United States or Canada for 25 selected candidates. This offer has been gratefully accepted and a committee presided over by the chairman of business will shortly be making the necessary selection from among the applicants The students so selected will act so to speak, as student ambassadors to the schools to which they are posted, and it will be for them to uphold the reputation of the medical student body in the United Kingdom On their return it is to be hoped that they may be able to present us with an interesting survey of medical education in the United States and Canada as seen by the student already familiar with English methods It is obvious that successful applicants may wish to be assured, before they leave this country that the studies which they pursue during their two years' absence will be recognised by the licensing bodies here as part of the curriculum The Chairman of Business and I consulted the executive committee on this point in February, and with their approval intimated to the bodies that the council would raise no difficulty if they saw fit to accord this recognition A number of bodies have already agreed to do so

REVISION OF RECIPROCITY

The severance in October of the reciprocal relations between the United Kingdom and Italy to which I alluded in November has set us free to make it known that the view of the law on which an important provision of the Anglo-Italian agreement of 1925 as to professional practice in the two countries was founded has since proved to be mistaken The point at issue is not easy to explain in simple language, but it may shortly and I hope accurately, be put as follows

> A territory outside the United Kingdom which wishes to enter into, or remain in, reciprocal relations with the United Kingdom under Part II of the Medical Act, 1886, is required by section 17 to afford such privileges of practising in the territory as to His Majesty may seem just to the practitioners designated by the section as 'the registered medical practitioners of the United Kingdom "

Who are these practitioners ? The view which in 1925 had prevailed since 1886 was that every practitioner whose name was in the Medical Register was a registered medical practitioner of the United Kingdom The later, and the authoritative, view is that only practitioners registered by virtue of qualifications granted in the United Kingdom or in Eire are registered medical practitioners of the United Kingdom That is to say, practitioners registered in the separate lists of colonial practitioners and of foreign practitioners contained in the register in pursuance of section 14 of the Act are not registered medical practitioners of the United Kingdom , and it follows that no territory is required to afford privileges of practising to colonial or to foreign practitioners as a condition of the establishment or maintenance of reciprocal relations between that territory and the United Kingdom

LAX CERTIFICATION

As in the last war, the organisation of the resources of the nation for the combatant service generally for the supply of munitions, for the mobilisation and use of labour, for public assistance, and for pensions, gives rise to a host of occasions on which registered medical practitioners are requested to sign certificates of fitness or unfitness for persons under their care Such medical certificates to be valid, must by law be signed by registered medical practitioners only, and this trust on the part of the state is dependent upon the maintenance of a reciprocal skill and good faith on the part of the practitioners The state is accordingly entitled to assume that a certificate signed by a registered medical practitioner is completely reliable and an honest and proper fulfilment of his obligation Unverified assertions made by the patient himself, personal opinions as to his fitness or unfitness for various forms of service or for particular hours of work, and other statements not founded on a careful examination of the patient immediately before a certificate is given, or supported by ascertained facts or conditions are not proper material to support a certificate signed by a registered medical practitioner as his testimony to facts within his professional knowledge

It has recently been made to appear to me by information and evidence received from competent authorities that in a number of instances there has been a relaxation of the vigilance with which such certificates are being signed I have therefore, after consultation with the penal cases committee, issued on behalf of the council an announcement in the medical press drawing the attention of registered medical practitioners to the terms of the warning notice issued by the council with regard to the granting of medical certificates The announcement recites the following passage of the notice, which I think it is in the public interest that I should repeat from the chair —

> " Registered medical practitioners are in certain cases bound by law to give, or may be from time to time called upon or requested to give, certificates, notifications, reports, and other documents of a kindred character, signed by them in their professional capacity, for subsequent use either in courts of justice or for administrative purposes
>
> " Any registered practitioner who shall be shown to have signed or given under his name and authority any such certificate, notification, report, or document of a kindred character, which is untrue, misleading, or improper is liable to have his name erased from the Medical Register "

The announcement also states that the council desires to impress upon practitioners that any such certificates should be granted *only on medical grounds*, and from the practitioner's personal knowledge of the health and physical condition of the applicant, as ascertained by him at the time of granting the certificate I hope, the President concluded, that the council will approve of the action which has been taken in this important matter

At the conclusion of the president's address Prof D F Cappell, M D , representing the University of St Andrews, was introduced by Dr D Campbell, and Prof W J Wilson, M D , representing the Queen's University of Belfast, by Professor Lowry

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LEPROSY CONTROL

Dr Edwin Muir, medical secretary of the British Empire Leprosy Relief Association, has gone to take charge for eighteen months of the Chacachacare Leper asylum in Trinidad Sir Leonard Rogers, F R S , who spoke in his place at the annual meeting of the association on May 22, stressed the need to modify the age long policy of compulsory segregation which leads to the hiding of cases until they are no longer amenable to treatment Epidemiological studies revealed that 80% of infections arise in the households of leprosy cases, and that 19 out of every 20 infections are derived from prolonged contact with the more infectious skin type, and only 1 from nerve cases This led to the release of a third of the cases segregated in South Africa as uninfective, and, with the spread of the knowledge that most early cases can be effectually treated in less than two decades, 4500, or two thirds of the known cases, largely voluntary admissions, have passed through the new kind of agricultural leper colonies in South Africa and been released as no longer infective In a badly infected area in the humid Southern Sudan over half of the 7075 cases moved to agricultural colonies have also been cleared of all symptoms of active disease In Nigeria, the most seriously infected of our colonial possessions, within ten years the patients, mostly infectious ones, isolated and treated under a voluntary system in large agricultural colonies, have increased from 2500 to nearly 7000 In British Guiana the government modified their compulsory isolation law to permit early cases to be treated at dispensaries, the first of which were financed by B E L R A All this has been achieved through treatment less effective than the association would like, and little progress has been made in the last few years in discovering a curative treatment for all stages of the disease Hopes were aroused by reports of improved results from the use of certain aniline dyes such as methylene blue, and of diphtheria toxoids, but they have not been confirmed A new oil, closely resembling the effective hydnocarpus oil in its chemical formula, is now being tested, and it is on such chemotherapeutic lines that progress is most likely to accrue

Sir William Peel, chairman of the executive committee, asked for closer cooperation between all parts of the Empire He thought we should pool our resources and that the richer colonies should contribute to the vital needs of the poorer

The association should now be addressed at 25, Kidderpore Avenue, London, N W 3

CROOKES LABORATORIES inform us that owing to the limitation of glucose, Crookes' Glucose B D will now only be sold against a doctor's prescription

In England Now

A Running Commentary by Peripatetic Correspondents

It is, of course, a great pity about the College of Surgeons, although I cannot honestly say that I spent the happiest hours of my life there, but I will admit to having received the greatest shock of my life there when I was told I had passed the Conjoint surgery a good nine months before I imagined they would countenance a serious attempt I can remember, too, dropping in one Wednesday afternoon to see if their library had any good books on anatomy, which was engaging my attention at the time It was a nice library I awoke to find that someone had brought me a pot of tea and a plate of Marie biscuits There was no talk of payment, which was a good thing as I hadn't any money on me In the museum I asked if Dr James Mortimer* had been along that week, but it seemed that I had just missed him Yes, it is a pity about the College Now, if it had been that Queen Square place what a howl of delight would have resounded throughout the world It was there, wasn't it, that the gentleman on receiving the Pink Slip shot up a statue or two? I wonder how he is getting on I've always wanted to meet him

* * *

It is not easy to see a justification for the B.M A suggestion that doctors should raise their fees by 20% The newspaper in which this item was pointed out to me by a fellow-guest in an hotel gave the paragraph the heading, " You must economise in sickness now," and not, as it would have done in the last war, " Your illness will cost you more " This perfectly proper reaction to the B M A 's inflationary policy is probably not what the B M A intended, unless the association is making a subtle attempt to prevent its members from overwork next winter A small increase in fees to cover increased expenses, such as car-costs, would be reasonable, but an attempt to catch up with a rising cost of living seems unjustifiable Has the doctor's cost of living risen since the war? Mine has not The increase in income-tax and the rise in food and commodity prices have been offset by a reduction in household staff, in food expenditure, and in what my young brother when making out his weekly budget for my father's inspection used to include under " sports "—drink, tobacco, sweets, theatres, holidays, week-ends and clothes Sherry, books and the children's education remain our only luxuries The first will be taken from us, for the second there are always the libraries, for the third we shall fight to the last ditch No doubt the extra 1s 6d next year will be hard to find, but it cannot be the Chancellor's intention that doctors should deliberately increase the patient's cost of living

* * *

We must go a long way back before we can light on any novelty which has had such a wholesale success as the sulphonamides Probably the rise of the salicylic-acid derivatives is the nearest example to what is now happening It is perhaps lucky that they have a depressing effect on the digestion and the spirits, for this makes the public realise that they cannot be used indiscriminately for any odd pain, like aspirin But sooner or later some less nauseating compound is likely to be found and then it may become difficult to prevent indiscriminate use While my " dugout " mind was pondering this a flying finger from Heaven smote me, and in a few hours I was passing through my first personal experiences of the use of sulphathiazole The drug did what was expected of it nobly, thoroughly and promptly, but it also led to the appearance of paraphenomena, or phantasmata, some of which were new to my reading or experience It is always difficult adequately to describe experiences or phenomena which are strange to men's apprehension, yet the attempt must be made

The first effect of the drug on me was to balloon me out so that I occupied a far greater space than before Further, it seemed to divide me into separate spheres of appreciation, there was somewhere or other a more or less solid core which was ME, but external to that, and only united to it by tenuous bonds of information, a shadowy mobile vapour constantly billowing up ar from ME but never merging into ME! External again were innumerable weaving lines which were tive and prehensile so that not only did the whol the solid more or less central ME, know at once it tion in space in relation to other bodies, but it handle these as it pleased All this sounds far but is as nearly accurate as I can make it A v colleague of mine who has a similar experience, from sulphapyridine in place of sulphathiazole, cc this disassociation, but he would add that his M not securely anchored, but a floating or even revolving nucleus, like that imagined by Coleri the dream of Kubla Khan, and like that requi least the thrice-woven circle to restrain its wand Twenty-four hours later I was beginning to contra I was still much larger than I knew I ought to b still I had an uneasy sense of prolonged and perceptiveness and prehensiveness Today af further twenty-four hours I am all but norma addition to these phenomena there were the ordinary manifestations of anorexia, and of wa physical nausea and—curiously—a deep cornea of fifty years' standing which had never bother before began to burn and smart, and eventuall duced a conjunctival reaction, which in turn is passing

I am neither a trained psychologist nor a t chemist, and I imagine that it is between these tw the battle of explanation will join, and it will be, Lucretian phrase, sweet to stand safely on the sho watch the contortions of the combatants If I h make a book on the final result all my money wo in support of the chemical faction, for they can pr scientific method in testing their hypotheses, w the experimental methods of the psychologists ar perfect, and tend to revert to the confused and es jargon of the alchemist But surely 100 years ag *Jonson foresaw the coming of the sulphonamides*

> " 'Tis the secret
> Of nature naturiz'd 'gainst all infections,
> Cures all diseases coming of all causes,
> A month's grief in a day, a year's in twelve,
> And of what age soever in a month
> Past all the doses of your drugging doctors "

* * *

The large and representative committee set up to the medicine of the future has inaugurated its acti and I see that attention has already been di towards the position of the teaching hospitals in the of a plea for extension of education to the hospit general I should have thought that such a demanded no insistence The wealth of clinical ma in the municipal hospitals has long been recogn failure to utilise it adequately for teaching purpo continually deplored, and the developing liaison the staffs of the voluntary hospitals has been grat applauded by those responsible for undergrad instruction But the provision of material is one t the capacity to make full use of it is something different and I shall be interested to see what prop are forthcoming, especially as the personnel of Medical Planning Commission includes several ex enced deans and ex-deans of medical schools

Since I am approaching that state of life which is far from realising Kipling's description of " t expired," my activity in the remote future will prob be strictly limited (perhaps as an occasional sop sc thing generously designated " emeritus " may be tu over to me), but in the meantime I can contemplate general principles, for which a long experience of teac and examining has given me considerable respect S form of state control may quite easily deal with hospitals—that is merely a matter of official adminis tion and control But can we assume that the d of clinical instruction to students will be as ea arranged? Is it merely a matter of £ s d? I am so sure Whole-time professors divorced from all c tact with private practice are not best suited to inst those who have not only to pass examinations but s sequently to practise the healing art And judging their contributions to the medical journals, even most enthusiastic supporters of a state medical serv recognise that there are essential features for the young to learn which are not in the syllabus or curriculum, such as the courtesies to be extended to his fellow practitioners, and the use but not the abuse of bedside manner. We who have been attached to teaching schools appreciated the kudos which our position in itself conferred. We even supposed at one time that we should derive some financial advantage through the students whom we had taught. The disillusionment which in so many cases has resulted has left us reconciled if not contented, especially if we had a genuine love for medicine and realised that to teach is to learn. But that was all very well for men with a comfortable private income. It hardly looks as if the future can produce enough successors of this type.

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* Vide "The Hound of the Baskervilles"

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Whether "picking up" or "dropping" potatoes is the more soul-destroying task is a moot point. Dropping is certainly a greater physical effort but, on the other hand, it does not involve that exhausting mental process of classifying each potato picked up from the "cave" as good, bad or fit for seed, which is rather like a modest edition of what one imagines the Day of Judgment will be. When you drop seed potatoes you are expected to bend down and set each tuber firmly in the furrow at a stated interval, usually 18 inches or 2 feet, from its next-door neighbour. After an acre or so of this some backs begin to feel the strain and their owners must either devise a non-bending technique or else fail the country in her hour of need. Now if the potato is merely dropped from the upright position so that it falls some 3 or 4 feet it inevitably trickles downhill and finally comes to rest against its fellow in the row and this will never do, for spacing (as in family planning) is all-important. If it is to be dropped instead of planted it must be dropped in such a way that it does not run, and this is achieved by imparting spin to it. Thus, if the furrow slopes uphill, the potato must be spun from the off, and if downhill, from leg. Agriculturists ignorant of cricket are suitably impressed when they see this done by a master hand. Another method of relieving the monotony of potato dropping is to imagine oneself a Narzee bomber trying to pick out hospitals and churches as represented by small clods or stones. Every objective hit counts one point, but near-misses count nothing. This is essentially a competitive game of skill demanding a high degree of moral integrity in the players. Unlike us potatoes go green when sunburnt and are then given to the pigs. Later in the year all these infernal potatoes and their vast progeny will have to be dug, which is the hardest task of all—in fact, the potato gives nothing but trouble from beginning to end. It is even, I understand, a nuisance in the kitchen.

* * *

We who live in the country are notoriously out of touch with the higher flights of therapeutics, but we are always willing to learn. "All my life, doctor," said an urban lady to me the other day, "I've had a weak throat. In fact as a child they were always expecting it to turn to diphtheria and I had to be fed on spinach." If I had been her doctor I should never have known about the menace hanging over her and might well have precipitated it by my ignorance of the specific.

* * *

We are rather proud of the resuscitation ward at our hospital. After our last blitz a woman came to the porter's lodge and asked to be allowed to visit Mrs. —— who had been brought in some days earlier as an air-raid casualty. "What ward is she in?" asked the porter on duty. "She was admitted to the resurrection ward," the woman replied, and resenting a curious expression on the porter's face, added, "Yes, and I know what I'm talking about."

* * *

Scottish shepherds have no monopoly of the classical learning. Recently I overheard a conversation between one of our West Country shepherds and a farmer who was bemoaning the lateness of the spring and the bad growing weather.

"Doanee worry, maister," rejoined the shepherd, "'twill be all right presently when Phœby comes." Now Phœby has come and it is all right. The red landscape is rapidly turning green.

Letters to the Editor

"SCIATICA"

SIR,—Many besides myself will be grateful to Dr. Walshe for dealing with Mr. Kellgren's paper on sciatica. I could not make head or tail of it, but I felt that criticism would come better from a neurologist than from me. I should like Dr. Walshe now to come to grips with the orthopædic surgeon, for it seems a pity that there should be so much misunderstanding about the meaning of a word. Dr. Walshe and I think the majority of neurologists would limit the meaning of sciatica to neuritis of the sciatic nerve, which as he says may be recognised by the characteristic signs of peripheral-nerve involvement. On the other hand, many people, of whom I am one, *define sciatica as pain in the distribution of the great sciatic nerve or some part of it.* This simply means that we regard sciatica as a symptom and not as a disease or a diagnosis. If Dr. Walshe persists in his refusal to recognise this "new sciatica" he will find himself out of touch with a great deal of modern thought and writing on the subject. What, for instance, does he make of sciatica due to prolapsed intervertebral discs, spinal arthritis and other conditions? Nobody pretends that these cases have all the characteristic signs of peripheral-nerve involvement, yet they are called sciatica the world over. Is this all nonsense? I would prefer *to think that it is progress*, for many of the conditions now described under this heading were unsuspected when the classical description of sciatica was first given.

Sciatica is due to irritation (or inflammation) of some or all of the fibres which go to make up the great sciatic nerve in any part of their course from the spinal cord to the periphery. As in many other affections of the nervous system the investigation of a case of sciatica calls for a topographical as well as a pathological diagnosis. The regions which may be involved are (1) the spinal cord; (2) the nerve-roots; (3) the short trunks of the spinal nerves as they lie in the intervertebral foramina; (4) the *lumbosacral plexus on the posterior wall of the pelvis*; and (5) the trunk of the great sciatic nerve and its branches.

(1) Sciatic pain is, I believe, not a common symptom of spinal cord disease. But I have met with at least one such case which was correctly diagnosed by a neurologist.

(2) The symptoms, and particularly the march of symptoms, of a spinal tumour are well known. It is sufficient here to say that if the tumour involves the appropriate nerve roots the dominant symptom will be sciatica. I have operated on such cases and cured them. In the same category should be placed the prolapse of an intervertebral disc. This is really an extrathecal spinal tumour, or at least a lump, which projects backwards into the spinal canal and makes pressure through the dura on one or other of the spinal nerve roots. This is an undoubted cause of sciatica; but, in spite of all the cases which have been reported, it is still a relatively uncommon cause. Enthusiasts might note that the incidence is about 3%, which means that for every case of prolapsed disc there are at least 30 cases of sciatica which are not due to prolapsed intervertebral discs. We have now learnt to recognise the type of case in which a prolapsed disc may reasonably be suspected, and we have means of verifying the diagnosis by X-ray examination.

(3) In 1916, or thereabouts, Sicard drew attention to the liability of nerves to irritation or inflammation as they lie in bony canals or foramina. Rather unnecessarily he coined a word, "neurodocitis," to denote this condition. Further, he expressed the view that arthritis of the lateral intervertebral joints is a common cause of 'neurodocitis' giving rise, in the case of the lower lumbar and lumbosacral joints, to sciatica. In 1927 Putti (with acknowledgements to Sicard) also drew attention to the frequent association of spinal arthritis and sciatica. Indeed, he went so far as to say that sciatica is synonymous with spinal arthritis. This, of course, is a gross exaggeration. But it must be confessed that the more one sees of sciatica in orthopædic practice the more frequently does one find that it is associated with stiffness of the lumbar spine, spasm of the erector spinæ muscles, pain on forced movements, and more or less evidence of arthritis of the lateral joints in the X-ray pictures. Many of these patients also give a history of previous attacks of "lumbago." I

therefore am one of those who believe that spinal arthritis is really the commonest cause of sciatica.

(4) It is well known that disease, particularly malignant disease, in the pelvis may give rise to severe sciatic pain from involvement of the lumbosacral plexus. Such cases are diagnosed by routine pelvic examination. Here I would like to add that uncomplicated sacro-iliac strain (the commonest cause of pain in the back) is not a cause of sciatica.

(5) Lastly, no one will deny that neuritis of the sciatic nerve trunk is a cause of sciatica and that it presents all the characteristic signs of peripheral nerve involvement. Such cases are sometimes cured almost miraculously by an injection into the nerve or more slowly by other local treatment. Nevertheless I believe that this is a comparatively uncommon condition, and that many cases so diagnosed have their origin at a higher level. It is difficult to believe that all cases of sciatic neuritis go to a neurologist, while all cases of spinal arthritis with sciatica go to an orthopædic surgeon.

Dr. Walshe has remarked that this malady (sciatica) has provided the therapist with some of his most difficult and thankless tasks. So also do all textbooks of medicine and neurology lay stress on the obstinacy of sciatica, its protracted course and resistance to treatment, and its liability to recur. This is not my general experience, although to be sure there are some difficult cases. I believe that much of this ill-repute is due to the fact that so often the wrong part of the patient is treated. I have known many cases submitted to prolonged local treatment over the course of the sciatic nerve, while the real seat of the trouble—the lumbar spine—has received no attention. Spinal arthritis is treated by physiotherapy—i.e., radiant heat, massage, exercise, sometimes manipulation, and occasionally epidural injections—in the belief that the same periarticular fibrosis which causes the stiffness of the spine is also responsible for the irritation of the spinal nerves, and in the hope that by relieving the stiffness the sciatica also will be cured. This treatment is often successful, but there are cases in which it fails and there are others in which the sciatica recurs in successive attacks. I believe it was Putti who first suggested that, *when other means fail*, sciatica can still be cured by "decompression of the intervertebral foramina." This operation, which I call spinal arthrectomy, consists in the removal of the articular facets of the lumbosacral and two lowest intervertebral joints on the affected side. It is not an operation which one wants to do on every old patient with sciatica; but it is an operation which will cure sciatica, provided that the correct diagnosis has been made. I have done it more than 40 times and I have hardly ever known it fail.

Here then is an orthopædic conception of "sciatica." I do not think that Dr. Walshe can call this a "conglomeration of unrelated and obscure conditions." It is true that there are many different and if you like unrelated causes of sciatica, but so are there many different and unrelated causes of spastic paralysis. All I have done is to apply to affections of this (peripheral) nerve tract the same methods of investigation which Dr. Walshe would apply to the case, say, of the pyramidal tract—namely, determine first its course and anatomical relations and then consider the pathological processes which may affect it in any part of its course. I hope that this may appeal to Dr. Walshe's logical mind. At any rate, there is no-one whose candid criticism I should value more.

London, W.1. A. S. BLUNDELL BANKART.

E.M.S.

SIR,—The Emergency Medical Service has been at work for nearly two years now, and perhaps the time has come for a few considered criticisms.

Specialists.—There is urgent need for training more men to deal with traumatic injuries in the plastic, thoracic and neurosurgical units. The open chest, the depressed skull, the mutilated face, cannot be immediately transported to these clinics; so often there are multiple injuries. Jefferson and Northfield groan about the occasional lacerated scalp and the missed associated skull fracture (*Brit. med. J.* May 3 and 10, 1941, pp. 684 and 728). They cannot have seen the filth, the dust and the dirt that covers the buried patient. But they are right in saying that the men who handle these patients must be trained in what to do, and especially what not to do. Surgeons at the casualty centres should be sent for short periods to see and live amid the work of the special units. It is impossible to acquire the technique and learn the difficulties and dangers by merely attending an odd postgraduate course. At present our leading personnel (I can write especially of the thoracic units) drive through savage air-raids to attend different hospitals. It is foolish to risk our limited expert personnel. We would not send our generals to do battle themselves.

E.M.S. and the future.—The name Emergency Medical Service should be altered. Its functions, we can now see, will embrace more than the emergency of war. With all the leading hospitals blitzed it will take at least three years to rebuild them. The life of the E.M.S., it seems, will be a long one, and the sooner it becomes the Royal Civil Medical Service the better, because it will then be able to construct and plan with vision. At present the slightest alterations to a hospital under the E.M.S.—such as changes to a ward—arouse arguments over who is responsible for payment, and whether it is to serve for the war or after the war.

Smaller hospitals.—War has been a great help to these. Through having to keep beds empty for casualties many of them have been freed from debt, and are even enjoying affluence. And yet they have no resident doctors and no whole-time trained surgeons to deal with casualties, while two or three miles away are large, well-equipped E.M.S. hospitals. Such small hospitals take up large numbers of nursing staff, and casualties and other emergencies are often admitted to them while the E.M.S. hospitals, with skilled staff, are standing by. In my opinion some of these minor hospitals should be closed.

Staff personnel.—The interchange of base and acute hospital staffs is not being carried out, and this is not fair to some of the men. The interchange would permit the "front-line" men to see how his cases progress with the line of treatment he adopts. At present he has no idea of the ultimate issue of his cases. It would also promote better understanding and cooperation when the base hospital staff are called on in an emergency to assist the "front-line" hospitals.

Shortage of doctors.—Beside other reasons for shortage, one stands out clearly: too many medical men are doing purely administrative work. Some of the best surgical and medical brains are thus occupied. Medical men are completely untrained in methods of organisation and the difficulties in the distribution of casualties show this a little. A sector officer may be a good surgeon, but that doesn't mean that he can manipulate thousands of beds, nurses, doctors and what-not. Many of the sector officials sit at their desks and attempt to administrate without visiting the hospitals and discussing personally with the surgeons and physicians their difficulties and troubles; most of them have never even seen a casualty station in action, and don't realise that however well it works on paper the maximum number of casualties that two surgeons can deal with in a night is about 30 to 40. Casualties beyond that number should be sent elsewhere or the operating staff should be reinforced.

Secretarial assistance in research.—In Spain, according to Jolly, there was attached to every surgeon an orderly who wrote full dictated notes on the cases. Here with over a thousand beds functioning I can get no secretarial assistance whatever. All the case-sheets of the casualties are sent to the Ministry of Pensions. We ourselves have had to write hundreds of copies of histories of these cases. Such work is time-wasting from a hard-worked surgeon's point of view, and that time could be profitably spent in research. Plaster therapy, local and general sulphonamides, burns and skin grafting are a few of the subjects on which we collect evidence so as to be able to evaluate the newer methods of treatment. Obviously this is work of extreme national importance. The attitude of the E.M.S. is that they are not interested in research. "We, the E.M.S., have special units well equipped. If you like to keep a record of your cases, it is, my boy, very charming of you, but we don't ask it!" It is to the shame of the E.M.S. that they are not lifting a finger to help in compiling such records. Army units are often attached to E.M.S. hospitals; these are well staffed with orderlies who fill in forms or distribute uniforms. They have never been taught the elements of first-aid, they never attend in the theatre, and do not ven unload their own Army ambulances It might have een thought that in this total war these orderlies could e permitted to attend at least to the secretarial work of he surgeon in the Army section But that it seems is mpossible · how could they take orders from a civilian loctor? Why not put the E M S officer in uniform and olve such difficulties? The Army doctor attached to is regiment in the district could be attached to the M S hospital as liaison officer He could see and isit his own hospitalised patients and practising the rt of applying plasters and dealing with air-raid casualties would serve him well as preparation for sterner scenes

The bombed patient —"Front-line heroes whose ourage is winning the war," we say But tinsel flattery s not enough The soldier the sailor and the airman have their convalescent homes the E M S patient has none To recover after weeks in some primary base hospital itself being bombed and then to be hurled back homeless on the mercy of friends or relations is not good enough The child bombed in an air-raid shelter should not be permitted to return to London to roam the streets and describe how "dead legs were lying about"

Finally Sir it is grand to belong to a service where one need not simper ever in serene applause

CARUNCUS

THE IMPETIGOCOCCUS

SIR.—In his article on May 24 (p 683) Dr Hope Simpson suggests that there is a specific organism, diplococcal in its "natural morphology which causes impetigo and probably pemphigus neonatorum (We may for the moment consider the "cause" in the narrow sense of an infecting organism and omit other ætiological considerations) The reasons for his suggestion are essentially that he has found such an organism in smears from impetiginous vesicles . that impetigo is a clear-cut clinical and pathological entity and that it is therefore unreasonable to think that it can be produced by the same sort of organism that causes scarlet fever for instance that in epidemics it "breeds true , and that it can be cured by measures which do not cure 'other staphylococcal and streptococcal infections.'

The finding of diplococci in smears is interesting but does not identify the organism Much more needs to be done, and it is extraordinary that in textbooks of bacteriology and dermatology the bacteriology of impetigo is not mentioned or is found in the state in which a previous generation left it In fact group-A β hæmolytic streptococci may be grown from swabs taken from the lesions (table I) and although this does not mean that these organisms are the initial cause their presence has important implications which need investigating The supposition that hæmolytic streptococci can cause both scarlet fever and impetigo is not inconceivable bearing in mind the different types of disease caused by tubercle bacilli and also the changes in affinity for certain tissues that can be produced in some organisms such as the virus of vaccinia and some strains of pneumococci

TABLE I—HÆMOLYTIC STREPTOCOCCI AND STAPHYLOCOCCI FOUND IN THE LESIONS OF IMPETIGO AND JUVENILE PEMPHIGUS (The bacteriology was done by the E M S Pathological Service)

Clin diagnosis	Case No	β-Hæm streptococci		*Staph aureus* found
		Found	Group	
Impetigo	1	+	A	0
	2	+	A	+
	3	+	A	+
	4	+	A	0
	5	+	A	0
	6	+	Not tested	0
	7	0		0
	8	+		0
	9	+		+
	10	+		0
Pemphigus	17	0		+
	21	0		+
	24	0		+
	25	0		+
	26	0		+

It is true that impetigo and pemphigus neonatorum have recognisable clinical and pathological pictures but even here there has not often been the careful scrutiny which might explain the part played by nasal and aural discharges and by labial herpes in the initiation of impetigo An allied problem is whether impetigo does always breed true It usually does but I remember seeing a family of three children one of whom had scarlet fever one purulent otitis media and one impetigo We have learnt not to wonder at the coincidence of scarlet fever and otitis but remain dubious about impetigo

Pemphigus neonatorum certainly does not always breed true Recently four infants developed pemphigus in the baby room of a maternity department But they seemed to be only part of a large epidemic of staphylococcal infection which also caused paronychia and conjunctivitis and probably styes and rhinitis (table II)

TABLE II—OUTBREAK OF INFECTION IN BABY ROOM OF MATERNITY DEPARTMENT

Case No	Date	Age	Manifestation of disease					Bacteria cultured
			Pemphigus	Paronychia	Conjunctivitis	Styes	Rhinitis	
11	Mar 27	12 days		+				
12	30	11 ,,			+			
13	Apr 1	6		+				
14	4	5			+			
15	9	8		+				
16	10	23 yrs *		+		+		
17	18	6 days	+	+				*Staph aureus*
18	18	10 ,,		+				
19	19	7		+				
	21	9	+					
	23	11 ,,			+			*Staph aureus and albus*
20	21	8			+			*Staph aureus*
21	22	6	+					*Staph aureus*
	May 3	1[illegible]		+				
22	Apr 24	7 ,,	+	+	+			*Staph aureus and albus*
23	2[illegible]	7		+			+	

* A nurse

The fourth contention, that impetigo can be cured by measures which do not affect other staphylococcal and streptococcal infections is not entirely convincing as it is rarely possible in these infections to apply medication to the affected area as intimately as in impetigo

These criticisms are not intended to imply that I think that Dr Hope Simpson is necessarily wrong in his conclusions I obviously do not know the circumstances and bacteria which produce impetigo but here is surely a rich neglected field to be harvested by the bacteriologist and immunologist and by the clinical epidemiologist Perhaps it has already been done but if so the knowledge is not widely appreciated by the medical profession

Cuckfield Sussex PHILIP EVANS

POSTWAR HOSPITAL SERVICES

SIR.—I think the authors of the special article of May 17 have expressed quite fairly if somewhat ingenuously. the general trend of opinion among people who have to do with hospitals nowadays Some measure of state control (the less the better) through regional committees representing the various interests concerned is probably the ultimate solution of a problem created by the failure of the voluntary hospitals to meet the needs of the community As to the means by which this machinery is to be set up—there s the rub To discuss it even in outline is beyond the scope of a letter

It is on one of your contributors' ancillary conclusions that I wish to break a lance They make the ex-cathedra statement that the post of medical superintendent should be abolished They make no bones about it He must be put away I will confess that in the dear days of peace I was such an one myself and come what may I have no intention of being abolished even in deference to this weighty opinion · not solely (I hope) because my bread and butter is involved but as a matter of principle or policy if you like It has become increasingly clear that certain people (mainly associated with English voluntary hospitals I am afraid) consider that medical superintendents are redundant, because they are normally cross, stupid and obstructive. They are for ever quenching the fire of genius which lights the eye of the young consultant, and by so doing they bar the way to all scientific progress in the hospital. In the main it is sheer nonsense, as everyone is aware who has had experience of both voluntary and municipal hospitals. I shall, however, confine myself to a few observations on the views expressed in the article.

The Dickensian description of a medical superintendent as an overwrought, incompetent Atlas is, I shrewdly suspect, directed at some individual. It is certainly not a true description of the average M.S., who is really quite a decent fellow and one who knows his job. It is not an easy job, God knows, but merely to substitute a layman for a doctor does not make it any easier. On the contrary.

There is no reason in the wide world why a medical man should not have a talent for administration; many do in fact possess it and exercise it in many ways, quite apart from hospital work.

A hospital is a living organism built of three main parts—medical, lay and nursing. I contend that some one person must coordinate the work of these three departments, if friction and overlapping are to be avoided; and it is highly advantageous that that person should have a medical training. Questions affecting the work of the resident and consulting medical staff, contact with general practitioners, the investigation of complaints, and the planning of new departments—all these are properly the concern of the medical administrator. He should have a limited amount of clinical work to do, for the other side will absorb much of his time.

There must be a competent lay officer working under the medical superintendent, but responsible direct to the hospital committee for financial matters. He may be called secretary or steward, the name matters little, but his duties and status must be clearly defined.

It is indeed a quaint conceit that the holding of a responsible post, resident or non-resident, should "tend to a cramped outlook" and make a man "a wary political fencer," afraid of losing his job. To feel that I was less broad-minded than some of those practising the art of clinical medicine and surgery today, would make me alarmed and despondent.

Lastly, all the large Scottish voluntary hospitals have medical superintendents and in my experience they are administered in an extremely efficient manner. This also holds good for the majority of hospitals on the Continent, in Canada and U.S.A. Does the air and soil of England demand something different? It seems odd.

TERRITORIAL.

GASTRIC ACIDITY IN INFANCY

SIR,—I was much interested in Dr. R. A. Miller's article on the gastric acidity of the newborn in the March *Archives of Disease in Childhood*, which you annotated in the *Lancet* of May 10. I feel that the acidity is an unreliable indication of the type of mucosa except when one is dealing with large numbers, and the presence of 3 achlorhydrics among 50 healthy children does not necessarily indicate 3 hypoplastic mucous membranes. On the other hand, the histological finding of atrophic mucosæ in prematures is an arresting fact of rather a different order. The persistence of a partial failure of development in this direction would fall into line with the ideas of the congenital origin of hyperplastic and hypoplastic gastric mucosæ. I think a distinction should be made between a hypoplastic mucous membrane which has a normal histological structure, although subnormal in area and hence devoid of rugæ, &c., and atrophic mucosæ in which the glandular elements have suffered either as the result of degeneration or of chronic inflammation. I have always felt that atrophic mucosa in the stomach and the diseases associated with it should be considered a separate entity altogether from a mere failure of full development.

The idea of a gastrogenic hormone of maternal or placental origin would fit in with the accepted ideas of the hormonal control of the descent and development of the testicles. In some cases undeveloped and undescended testicles can be carried to the normal state by supplying the missing hormone after birth. It would be interesting to supply hormones of pregnancy to hypoplastic stomachs, but I suppose that in adult maturity little could be affected. If only one could know that a child's mucosa was hypoplastic one could supply him with hormones of pregnancy, but it would be even more difficult to persuade the public to agree to routine test meals on newborn children than diphtheria immunisation. They would be worth while, because those infants with hypoplastic mucosæ would be subject to gastric attacks throughout life and to a risk of carcinoma later on; it is possible that a short course of hormone therapy might carry development to completion and avoid these possible sequelæ.

Harley Street, W.1. HERMON TAYLOR.

ABSORPTION OF BACTERIAL TOXINS

SIR,—May I offer a clinical example of what I consider to be further proof of the fact that absorption of bacterial toxins may be delayed by the immobilisation of a limb in plaster as suggested by Drs. J. M. Barnes and J. Trueta in THE LANCET of May 17?

As a casualty officer last summer I received a child aged 8 years who had suffered a flayed wound of the upper arm in a car accident. She was taken to the operating theatre within four hours and although the wound involved the radial nerve and muscles of the upper arm the main blood supply to the limb was intact. After careful repair the surgeon completely encased the whole arm from wrist to shoulder in plaster. The child recovered from the anæsthetic well and passed a very good night. In the morning she complained only of pain in the hand and although the circulation was not impeded the plaster was cut down the flexor aspect. Within two hours the child's condition had deteriorated—she became rapidly unconscious and despite all efforts she died before noon. The wound was clean.

At the time it occurred to me that the loosening of the plaster had released some principle which caused the child to die.

K. M. TOMLINSON.

Parliament

Rations v. Rackets

AS in the recent debate in the Commons the Ministry of Food was again criticised with frankness, and defended with reason, when on May 28 in the House of Lords Lord ADDISON deplored the trivial penalties imposed on those who exploit the nation. It was not enough to stiffen the regulations against offenders; when an important article of food—such as onions or oranges—became scarce, the Minister of Food ought to control its distribution. Again, between the fisherman and the housewife there is an expensive hiatus. The present price of milk, he said, was far too high. Though the Perry report had recommended a reduction of ½*d.* a pint within a fortnight the price was put up ½*d.*, not down. Lord DAVIES thought the small gardener should be encouraged to sell his surplus vegetables and Lord LISTOWEL declared the public were being held to ransom for eggs.

Lord WOOLTON, defending, said that in spite of the Hollywoodisms of "racket" and "gang" which flavoured the debate, the great mass of our traders were law-abiding citizens. He congratulated Lord SOUTHWOOD on his able maiden speech, but regretted it had taken an admixture of war and crime to break his silence. There was no lack of desire on the part of the Ministry to deal with law-breakers, and over the whole country there was a network of 1500 food-control committees charged with the duty of prosecuting people who committed offences against the Food Orders. In February of this year these committees instituted 1160 prosecutions, in March 2141 and in April 2300, and of these 95% had been successful. But he agreed that magistrates out of thoughtlessness had sometimes seemed to condone these offences. Loss as well as disgrace should follow conviction of offences against the food laws. Surely the time could not be far distant when the honourable traders of the country would make up their minds to get rid of the destructive parasites and hand over the evidence which was necessary to bring them to justice.

Lord Woolton proposes to bring more foods under control. He hopes that we shall never have to ration bread, but he believes that he will ration milk. He has to start a new system of experimental rationing and that would be full of administrative pitfalls, but he hopes that his experiments will secure the tolerant good will of Parliament and the public. He would presently try an experiment in rationing eggs making special provision for children and invalids. There would be no regular weekly ration but he would try to give everyone the maximum possible ration. Similar schemes would be applied to other commodities in due course. Within a few weeks he hopes to announce a complete control of fish prices and distribution. Lord Woolton added security made a dull story compared with racketeering but he was thankful to be able to say that we could face the coming months with confidence in the security of our essential food-supplies.

QUESTION TIME

Our National Loaf

Sir ERNEST GRAHAM LITTLE asked the Parliamentary Secretary to the Ministry of Food what success had attended his efforts to induce the public by advertisement or otherwise to consume the national whole-wheat loaf of 85% extraction whether he was aware that there was difficulty in obtaining this loaf, and whether in view of the urgency of the need to save shipping space and to provide bread of a higher nutritive value than the straight-run white flour, he would follow the example of the Union of South Africa which faced with the same difficulties had recently prohibited the provision of straight run flour.—Major G. LLOYD GEORGE replied: The output of national wheatmeal has risen steadily during recent weeks, and bakers in many parts of the country report encouraging increases in sales. Members of the public still find difficulty in obtaining supplies in certain districts, but the number of complaints reaching the ministry is decreasing. As regards the last part of the question the position in South Africa is not the same as in the United Kingdom and as at present advised the Minister is not prepared to increase the rate of extraction beyond 75% to which he raised it on April 21.

Exchange of Prisoners

Major-General Sir ALFRED KNOX asked the Secretary of State for Foreign Affairs whether any satisfactory arrangement had yet been come to for the exchange with Germany of prisoners of war unfit for further military service.—Mr R. A. BUTLER, Under Secretary for Foreign Affairs replied: No reply has yet been received from the German Government to the last proposal made by H.M. Government. In the meanwhile, the question of making separate arrangements for the transfer to more suitable places of prisoners of war who are suffering from tuberculosis is being examined in consultation with other governments.

Examination of Returned Prisoners

In answer to a further question Mr R. K. LAW, financial secretary to the War Office, said: Details are now being worked out of a scheme by which all returned prisoners of war will be medically examined and treatment made available to those in need of it. Arrangements for the rehabilitation under medical supervision of disabled prisoners of war or any other ex-Service men are being made by the Minister of Pensions and the Minister of Health.

Physiotherapy in E.M.S. Hospitals

General Sir GEORGE JEFFREYS asked the Minister of Health if he was aware that his predecessor stated that it was the policy of his department that every hospital of 300 or more beds should have a properly equipped physiotherapeutic department that there were hospitals staffed with one or more masseuses acting under the direction of surgeons who had no specialised training in this branch of medicine that physiotherapists were appointed to the staffs of hospitals only on application being made by the medical superintendent and if he would give the lead in implementing his predecessor's pledge by directing that physiotherapists be appointed whether the medical superintendent applied or not and whether any alien physiotherapists had been appointed to posts under the Ministry of Health.—Mr E. BROWN replied: The policy of advocating the provision of physiotherapeutic departments in all class I hospitals with 300 or more casualty beds was announced in a circular of June 25 1940. The existing methods of staffing these departments are generally satisfactory. My department have invited hospital authorities to consider the appointment of physiotherapists, but I am satisfied that it would not be wise to insist upon such appointments against the wishes of the clinical staff of the hospital. No alien physiotherapist has yet been appointed to a post under the ministry.

Supply of Saccharin

Captain L. F. PLUGGE asked the Parliamentary Secretary to the Ministry of Food whether there was any shortage of saccharin and what retail prices were regarded by his department as equitable.—Major LLOYD GEORGE replied: The amount of saccharin released to tablet manufacturers is about 20 times the pre-war figure, but there is evidence of an unsatisfied demand in certain localities. The question of regulating retail prices has already been referred to the Central Prices Regulation Committee set up by the Board of Trade to administer the Prices of Goods Act 1939.

Medical News

University of Cambridge

On May 24 the degrees of bachelors of medicine and surgery were conferred by proxy on I. B. Mackay and A. R. P. Ellis.

The Royal Naval Volunteer Reserve officers decoration has been awarded to Surgeon Commander Charles Elliott, D.S.C., M.D. Birm.

In a recent casualty list Probationary Temp. Surgeon Lieutenant G. H. Dalglish, M.R.C.S., R.N.V.R. and Temp. Surgeon Lieutenant L. D. de Launay, M.R.C.S., R.N.V.R., were posted as wounded or injured and Temp. Surgeon Lieutenant A. Watt, R.N.V.R. as wounded.

The O.B.E. has been awarded for brave conduct in civil defence to Dr F. D. Murphy senior resident surgeon at Fulham Hospital, Hammersmith.

Lieutenant Oliver Ive, M.R.C.S., R.A.M.C., who was serving in the Middle East is reported to have been missing since March.

The annual meeting of the Medical Insurance Agency was held on May 26, with Sir Humphry Rolleston in the chair. The war has caused a serious falling-off in the volume of business and in the surplus profits available for the medical charities, but £1800 was paid to the Royal Medical Benevolent Fund, and £450 to Epsom College Foundation. It was also decided to allocate £514 to increase the endowment of the Squire Sprigge (Girls' Scholarships) Fund. Dame Barrie Lambert, Dr G. C. Anderson, Dr J. W. Bone, Dr John d'Ewart and Dr Henry Robinson were re-elected members of the committee of management for a further period of three years.

On Wednesday, June 11, the section of proctology of the Royal Society of Medicine will meet at 5 P.M., when Prof. E. R. Flint, Surgeon Rear-Admiral G. Gordon-Taylor, Dr Cuthbert Dukes and Mr C. Naunton Morgan will open a discussion on factors which make for safety in the preoperative and postoperative treatment of carcinoma of the rectum. On June 13, the sections of laryngology and otology will hold a combined meeting at Horton Hospital, Epsom. At 10 A.M. there will be a demonstration of cases by the chest unit, and at 11.30 A.M. a discussion on the relation of rhinology and laryngology to thoracic surgery will be opened by Mr C. Price Thomas and Mr F. C. Ormerod. At 2.15 P.M. Mr V. E. Negus will read a paper on the organisation of the ear, nose and throat department in the Emergency Medical Service, and later visits will be made to the ear, nose and throat department and the department of neurosyphilis of Horton Hospital.

The annual meeting of the Royal Cripples Hospital, Birmingham, was held on May 28. The average number of available beds has increased from 307 to 334 and of occupied beds from 270 to 286. Some empty beds were retained for casualties but on the whole there has been little interruption of the normal work of the hospital. Forty Belgian civilian orthopædic patients who had been obliged to leave a hospital at Ostend at the time of the German invasion were accommodated at the Woodlands. Half of them have already sufficiently recovered to be billeted out but are still under the supervision of the Belgian matron who accompanied the party. Last autumn Woodlands suffered three direct hits and two night sisters were killed but no patient was injured and work was carried on practically without interruption. The work of restoration is to be put in hand as soon as possible; two new wards have been completed since war started, but the rest of the reconstruction programme is held up for the time being.

Obituary

JOHN MORTIMER WATSON

M A CAMB , M R C S , SURGEON LIEUTENANT, R N V R

Dr J M Watson was the younger son and seventh child of Dr Henry Watson of Worcester He was born in 1913 and educated at Epsom College where he was head of Carr house in his last year He obtained the de Havilland scholarship and entered Trinity Hall, Cambridge where he graduated in 1935 Three years later he qualified M R C S from King's College Hospital and passed in surgery and midwifery in his Cambridge M B , but he failed in medicine, and the outbreak of war prevented him from taking the examination again After six months as house-surgeon at the Royal Bucks Hospital in Aylesbury, he returned to King's as a house-officer shortly before the outbreak of war, and it was then that his quality as a doctor first became clear In the turmoil that followed he was appointed casualty officer to a new first-aid post at King's where he was responsible to several different authorities, all a little sensitive of their rights Thanks to his tact and hard work the new department was running perfectly in a few days He stayed in this post until he received a commission in the Navy and was posted to H M S *Diamond* early last year Judging by his letters he enjoyed his new life, but he continued to give thought to the post-war problems of medical reconstruction and education which had always interested him Watson's recreations were walking, swimming, sailing and gardening He lost his life in the Greek evacuation in April

WILLIAM BOYD

M B GLASG , SURGEON LIEUTENANT R N

Surgeon Lieutenant William Boyd, of Bearsden, Dunbartonshire, who was reported missing last October is now believed to have been killed through enemy action He was educated at the North Kelvinside School and as a schoolboy he showed unusual versatility He was an all round athlete and created records in jumping and running, and he was also keenly interested in music and played the cornet and the trumpet in the school orchestra *Bill Boyd* — as his friends called him — graduated from Glasgow university in 1932 Although he led a busy life, he found time to help one of his professional colleagues in the work of running the 69th Glasgow Company of the Boys' Brigade He had already decided to enter general practice but first he was determined to acquire practical experience in the hospitals, and after holding resident appointments at the Royal Hospital for Sick Children, Glasgow, and at Stobhill Hospital he spent two years at the Dumfries and Galloway Royal Infirmary Only then did he feel equal to the responsibilities of general practice, and he began by assisting Dr James Glover at Tadcaster With his many interests Boyd found it easy to establish friendly relationships with his patients, and it was apparent from the first that he would make an ideal family doctor It was about this time that he took up photography as a hobby and it was characteristic of the man that he studied the subject in detail and he showed originality in the treatment of his subjects

Annan Glasgow

Boyd entered the Royal Navy in 1937 with the intention of serving for three years before settling down in practice, and before this war began he saw service in operations off the coast of Spain during the Spanish civil war When his term of service expired in 1940 he applied for an extension of his commission Thus for nearly four years he worked on destroyers, and for his services at Narvik he was mentioned in dispatches It was while he was on his way home after this long period of arduous duty that Boyd lost his life through enemy action at sea

HUGH MARKS

L R C P I , TEMPORARY SURGEON LIEUTENANT, R N V R

Hugh Marks was the only son of the late Hugh Marks and Mrs E A Marks of Randalstown He was educated at Portora Royal School, Enniskillen, and Queen's College, Belfast He obtained the licence of the Irish Royal Colleges in 1939 and after serving as R M O at Kidderminster Hospital he volunteered for service with the Royal Navy Sixteen days after embarking on his first ship it was destroyed by enemy action He had bartered *for youth's diadem the dross of after years*

JAMES FERGUSON HARPER

M B GLASG , R A F V R

Hamish Harper, who was killed in a flying accident last August, was the younger son of the late Andrew R Harper, town clerk of Renfrew, and of Mrs Margaret Harper He was educated at Glasgow Academy where he played rugger for the 1st XV He was also a member of the 2nd cricket XI A promising bat he was one of the few public school boys to make a century at the wicket Early in life he made up his mind to be a doctor, and as a student at Glasgow University he showed a keen interest in his work He graduated in 1935 and after holding resident hospital appointments in Glasgow he went as ship's surgeon on a Blue Funnel liner to the West Indies A year later he made a voyage round the world These long trips gave him great pleasure, and he was quick to avail himself of their educative value On returning home he worked for about two years as an assistant in general practice in Perthshire All who met Harper were attracted by his charm of manner no less than by his professional ability , and his enthusiasm for his work gave rich promise for his career In January, 1940, he joined the R A F V R and was posted to a squadron stationed in the north-east of Scotland Harper believed that his services as a doctor might on occasion be more valuable if he could pilot a plane He therefore spent much of his spare time in learning to fly, and it was while he was practising that he had a mishap that resulted in his death He was 29 years old

ROBERT HALL

L R C P E

Dr Hall who died on March 29 at his home in Belfast was born in 1861, the younger son of Hugh Hall of Hilltown, co Down, and received his medical education at Queen's College He qualified in 1886 and in the same year was appointed to the Belfast Infirmary which he continued faithfully to serve for nearly fifty-five years By numberless changes which he made during his tenure of office there he brought the hospital up to its present state of efficiency , it appears that he was the first in Ireland to place consumptives in wards apart from the other patients Diseases of the chest were his special hobby and at the infirmary and the Abbey sanatorium he had wide opportunity for their study This knowledge he imparted freely to others and Queen's men will not forget his Sunday morning ward-rounds and his informal and intimate teaching In 1921 he was elected president of the Ulster Medical Society and his address ' On some rare and obscure pulmonary and pleural conditions " revealed his enthusiasm his erudition and his inquiring mind

In his early days he was an athlete, cricketer and rseman, in later years the bridge-table was his ena Throughout the long years his unfailing interest youth seemed to preserve his own, and it is hard to agine "the Union" without him His wife who died 1929, was the daughter of William Rodgers of Drum, rnmoney His sons, Robin and Hugo, are both rving as surgeon-commanders, R N V R

HARRY OLIPHANT NICHOLSON

M D ABERD, F R C P E

Dr Nicholson's death on May 26, at the age of 71, moves one of the last physician-accoucheurs Second n of Henry Alleyne Nicholson, professor of Natural istory in Aberdeen, he studied there and at Edinburgh, aduating in 1891 and taking the Strathcona prize at ie M D examination After nine years in practice at irkcaldy, he went to Edinburgh, where he remained r the rest of his life, combining general practice with bstetrics For twenty years he was senior assistant hysician to the Royal Maternity Hospital, lecturing Edinburgh students on clinical obstetrics and examing Aberdeen students in midwifery, he also examined r the Royal College of Physicians of Edinburgh and for ie Scottish Midwives Board He was associated with ie New Town Dispensary as physician and later as hysician accoucheur After his retirement he spent uch time in collecting fossils in the hills of Cumberland nd he took pride in the fact that his name was associated ith several specimens Dr Nicholson is survived by is wife, a daughter of Sir Michael Nairn, Bt, a daughter, nd two sons, one of whom is a major in the R A M C

MARY LOUISA GORDON

L R C P E, L M

Dr Mary Gordon, who died at her home at Crowborough on May 5 at the age of 79, served for ten years s one of H M inspectors of prisons and as an assistant nspector of state and certified inebriate reformatories n both these spheres she came under the influence of Bryan Donkin, and when she retired in 1922 she set out er own view of "Penal Discipline" The subject was opical, for the report of the Prison System Enquiry Committee and the Webbs' book on English Prisons under Local Government had lately appeared Her ondemnation was as unhesitating as theirs, but her riticisms were those of the inside professional rather han the philanthropic outsider She felt that to apply uniform method to a heterogenous collection of ffenders was ludicrous At best, given in small doses, he thought, the system had little effect on the prisoners ne way or the other, but in its highly specialised developments, such as the convict prison and the Borstal nstitution, penal discipline could be actively mischievous The Borstal system, she held, promoted mental repression with a consequent failure of adaptation to life As alternatives she sponsored the deferred sentence and adequate psychiatric examination of the convicted

Dr Gordon was educated at the London School of Medicine for Women and obtained the Scottish conjoint qualification in 1890 Her early interest in the problems of social medicine and the treatment of alcoholism—she contributed the chapter on the inebriate to "Human Derelicts"—prepared her for her life's work She lived apart and her work, well done, absorbed all her energy, but she often attended the V D committee of the Medical Women's Federation where fellow members recall her sincerity and engaging appearance After her retirement she spent some time in Zurich where contact with the psychology of the Jung school led her to begin to write once more, this time with a wider view of life She was well read and wrote with easy grace, and in her "Chase of the Wild Goose" she introduced the aristocratic Ladies of Llangollen with due respect and a pretty deference to what they might have felt to be the rather "mixed" reading public of our more democratic day

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Dr JOHN MICHAEL DEWAR, who died in Edinburgh on May 24, bore his father's name and followed his footsteps as a general physician Since the outbreak of war, despite failing health, he had been acting as assistant physician to out-patients at the Royal Infirmary, where he showed himself a careful and kindly consultant and a pleasant and cooperative colleague A great lover of birds, he was a fellow of the Royal Society of Edinburgh and a member of several Scottish ornithological societies, he published his own observations under the title, "The Bird as a Diver" Dr Dewar was 58 years old and unmarried

Public Health

From the Annual Reports

GLASGOW

Glasgow has the largest population of any city of Britain outside London, though Birmingham runs it close The estimated population in mid-1939 was 1,128,473 It is increasing slightly but the excess of births over deaths is greater than the recorded increase of population so there is some migration from the city In 1939 the birth-rate was 19 2 and the death-rate 13 3, both low records The most interesting matter in Dr Macgregor's report is the fall of deaths from pneumonia to 857 compared with 1158 in 1938 and 1543 in 1939 Previous to the last year the average death roll was about 2000 The reduction of the pneumonia mortality to two-fifths of what it was until quite recently is of special interest, for Glasgow has made determined efforts to reduce it In England little attention has been given to the epidemiology of the pneumonias, but the Scots have studied it closely for many years Pneumonia kills more of us than all other infections put together so that even a slight reduction of its mortality saves more lives, than the total elimination of most infectious diseases, and the Scots and Americans have shown that there are promising lines of prevention The sulphonamides have, of course, done much to avert fatality from the epidemic forms of pneumonia, and with further research will do more

The number of notifications of ophthalmia neonatorum in Glasgow was 713 in 1939 A bacteriological examination was made in every case and the gonococcus found in 16 only Dr Macgregor notes that the treatment of gonorrhœal ophthalmia with M & B 693 is highly satisfactory and reduced the average stay in hospital from eight weeks to ten days

FINSBURY

Dr Blyth Brook's report is cut down to eight pages of typescript In this metropolitan borough the population density is 96 persons per acre and the house density 6 2 per house There was no maternal mortality in 687 births Infant mortality was 33 5 Finsbury is one of the London boroughs with a low illegitimacy rate In 1939 there were only 38 illegitimates, but their mortality was high—131 5 per 1000

From the School Reports

Dr John Allen reports that in *Taunton* 1611 of 3212 children on the elementary-school roll, of whom 13 5% were subnormally nourished were routine inspected Special inspections and reinspections totalled 10 238 Head inspections by school nurses averaged five per head and revealed 103 individual heads verminous The dentists inspected 3074 mouths, found 2445 to require treatment, and treated 1430 Of permanent teeth, 1968 were filled and 2107 extracted

Dr St Clair Stockwell reports that in *Leeds* the number of children on the school roll has been shrinking at the rate of 1000–1200 a year for some years In 1940 the number receiving state-aided education was 58 528, of whom 51,544 were on the elementary-school roll The total number of all inspections made was 62,659 Of those routine inspected 11 1% were subnormally nourished Of 33,075 children dentally inspected 27 802 required treatment and 18,921 were treated, of permanent teeth 16,892 were filled and 6926 extracted Head inspections by school nurses averaged about three per child and disclosed 8790 individual heads verminous

Dr Metcalfe Brown reports that in *Middlesbrough* the number of children on the elementary-school roll was 20,213 Statistics for the town are incomplete, but altogether 63,134 inspections were made Head inspections by school nurses totalled 103,253

Dr John Fenton reports in *Eastbourne* that of 4911 children dentally inspected 3473 required treatment, of were treated 1433 permanent teeth were extracted Of all the children inspected subnormally nourished The school nurses ,107 head inspections and found 562 individual verminous

hese figures from four typical English towns serve to raw attention to the three most frequent supplementary causes of ill health of our children, the control of which is far from satisfactory None of them is directly in the province of medicine though all are vitally important in maintaining health and we may justly complain that so long as people are allowed to be ill-fed and verminous and to have foul mouths we are not given a square deal in guarding their health Whether or not dental caries is theoretically preventable with our present knowledge of its causes, it is certain that there has been no improvement in the extent of the disease, so we must rely on dentistry to render mouths healthy Health requires our mouths to be not only clean but to contain serviceable teeth, so that the essence of school dentistry is to render mouths healthy by filling permanent teeth This calls for frequent inspections throughout the school life and no delay in stopping cavities immediately they are detected The school service alone cannot eradicate the head louse, it can and does keep the heads of school-children reasonably free from lice, but a national drive against lousiness in all sections of the community is necessary To ensure absence of malnutrition due to ill-feeding some system of rationing offers promise, for reports so far received suggest that the rationing necessitated by war, in spite of its being restrictive, has actually improved the nutrition of the people A midday meal in all schools as a part of education is an attractive proposition Continuous education in healthy habits of living from early infancy would probably succeed in the 95% of children who are educable, but lessons on hygiene given to older scholars by people who know little about it, or are ignorant of teaching, are futile

Infectious Disease in England and Wales

WEEK ENDED MAY 24

Notifications —The following cases of infectious disease were notified during the week smallpox, 0, scarlet fever, 1106, whooping-cough, 4242, diphtheria, 943, enteric fever, 53, measles (excluding rubella), 13,400, pneumonia (primary or influenzal), 1224, puerperal pyrexia, 124, cerebrospinal fever, 274, poliomyelitis, 4, polio-encephalitis, 0, encephalitis lethargica, 6, dysentery, 95, ophthalmia neonatorum, 86 No case of cholera, plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospitals of the London County Council on May 21 was 1818, including scarlet fever 222, diphtheria, 331, measles, 403, whooping cough, 440, enteritis 16, chicken pox 74 erysipelas 55 mumps, 7, poliomyelitis, 2 dysentery, 30, cerebrospinal fever, 46 puerperal sepsis, 6 enteric fevers 9 german measles, 15, malaria, 2, other diseases (non infectious), 50, not yet diagnosed, 110

Deaths —In 126 great towns there was no death from smallpox or scarlet fever, 1 (0) from enteric fever, 22 (1) from whooping-cough, 12 (1) from measles, 25 (2) from diphtheria, 35 (1) from diarrhœa and enteritis under 2 years, and 26 (4) from influenza The figures in parentheses are those for London itself

West Bromwich reported the fatal case of enteric fever There were 5 deaths from whooping cough at Liverpool and in the same week Glasgow reported 7 Liverpool also had 6 deaths from diphtheria

The number of stillbirths notified during the week was 210 (corresponding to a rate of 40 per thousand total births), including 16 in London

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WATSON & SONS (Electro-Medical) Ltd have lately put a new portable X-ray apparatus (MX 2) on the market It has a bigger output and is heavier than their earlier portable model, the MX 1 The new machine has a rating of 80 kV and 15 mA It may be operated from A C supplies from 52 to 250 volts, adjustment being simple and rapid Its total weight is 210 lb, and the whole machinery packs into four cases which may be carried in the back of a small car and assembled in about three minutes It is fitted with a Machlett tube of 1 5 mm focus and there is very little restriction on continuity of use The apparatus is truly portable as opposed to being merely mobile, for it may be carried and set up wherever there is suitable electrical power

Notes, Comments and Abstracts

NON-INFECTIVE CATARRH

BY A J COPELAND, M D Camb, B Sc Glasg, D P H

IF, from the group of complaints variously called common cold, coryza, febrile catarrh, respiratory catarrh, acute rhinitis and clinical influenza we collect cases of sore dry nares and sore dry cough, early and afebrile, we shall separate, I suggest, a clinical entity, which we can call non-infective catarrh Catarrh is an expressive word which by its very sound suggests something rough or raw, and its victims themselves say "My chest feels like a piece of raw beefsteak" Feverish cases, and especially those with constitutional symptoms, are excluded, but we may include in the non infective category cases with nasal discharge, if the discharge contains nothing more than the usual bacterial flora in no excessive amount The rest of the rhino-pharyngo laryngo-tracheo-broncho-œsophageal band-waggon may be arranged thus, in increasing order of severity 1 Infective catarrh—feverish colds, with sneezing 2 Generalised infective catarrh—similar but with suffused conjunctivæ and pains in the limbs and back, followed by lassitude, without influenza virus 3 Influenza—similar to the last, but with prostration and more serious symptoms of toxæmia, such as cyanosis, delirium or semi-coma, with influenza virus The new labels "influenza A" and "influenza B" (there are more to come) cannot yet be applied clinically, however satisfying they may be to pathologists

I make a sharp distinction between non-infective and infective catarrh The latter is spread by infected droplets, and the former is thought, I believe often wrongly, to be merely an initial stage of the same complaint, when it stops short the patient is thought to have escaped through natural or acquired immunity There often is a short phase in such a direct infection indistinguishable from the non-infective condition, but this does not mean that infection is the only road to catarrh I suggest that in a great number of cases infection plays no part whatsoever the cause is not bacteriological I am not discussing here the cases of dry catarrh due to known irritants—such as acids, alkalis, poison gas or tobacco

The 100% infection theory, which has been accepted by all the physicians of this century (the older school explained dry catarrh very well without it) presents us with some ætiological inconsistencies First, catarrh had formerly (in popular estimation and in the views of the faculty) been associated with chill, with night air, and especially with the chilly months—with the raw weather and east winds of January and February Yet it was not found in dwellers in cold high mountain air, nor in Arctic explorers This is put forward as an argument that chill drives people into close atmospheres, where they become infected Leonard Hill,[1] however, has told us that catarrh was not found among soldiers in the trenches in the last war, yet they must have been both chilled and crowded in dugouts The same difficulty arises in explaining the reputed immunity of sailors at sea, for submarine crews on patrol and the crowded mess-decks of battleships are also fairly immune

Next, catarrh is said to be associated with warm rooms, especially if they are ill-ventilated and crowded, such conditions, it is thought, favour an unhealthy swollen relaxation of the nasal mucosa and make it more susceptible to infection by carriers Yet heated solaria are not unsafe, warm sunshine is beneficial, and the traveller in the tropics, like his Arctic colleague, seems happily free from this reminder of home Then, as in January, 1939, many widespread epidemics of catarrh may arise at the same time, with explosive suddenness, especially in barracks, ships in estuaries, public schools and hospitals Such epidemics, although resembling influenza (without prostration), are without known virus, and no bacteriological cause can be assigned for them, unless it be some undiscovered virus "In the earlier stages of the common cold," says Douthwaite, "the upper reaches of the mucous membrane may be sterile.' A sterile epidemic is not easily explained by the carrier and droplet-infection hypothesis (the 100% infection theory), some much more universal fulminating cause seems to be at work Not only did it act like lightning over a wide area but it caused signs and symptoms especially husky voice aphonia, cough and pains in the chest, closely resembling those of catarrh caused by the inhalation of weak poison gas (e g, one part of mustard gas (H) vapour per million parts of air inhaled for an hour), yet atmospheric contamination by irritants could surely be wholly excluded

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[1] Hill, L *Lancet* 1940 2, 796

In the 1939 epidemic (Stuart Harris et al [2]) out of 16 large foci investigated 8 were in barracks and ships 6 in public schools 2 in hospitals It seems reasonable to exclude faulty hygiene, insufficient clothing lack of good mixed diet, close bedrooms, vitiated atmosphere and overcrowding in the services, public schools and nurses quarters, but if the assumption seems too great one or more of these factors should have acted earlier in the winter I think it is more significant that 9 of the 16 foci were in the neighbourhood of estuaries, and I suggest that there is an irritant operating in January and February from the Mersey to Southampton Water, and from the Medway to the Wash (but not from Spitzbergen to Ecuador) a certain type of British winter weather I think too that in a large proportion of cases of non-infective catarrh the changes in the mucous membrane arise only from chilling The explanation cannot lie merely in the chill of cold atmospheric gases—although one naturally thinks of the irritation caused by cold pure oxygen—because Arctic and icy mountain airs are harmless it must therefore be the cold atmosphere plus water vapour which is harmful It would be idle to speculate on the precise physical reactions which might occur between cold apour, or cold mist and the warm delicate mucosa, ut the pathological changes are the same as those seen fter exposure to weak irritant gases or in mild burns, here there is no question of bacterial infection, and s with gassing and burns non-infective catarrh may ither persist as long as the irritant is being applied, esolve, or become auto-infected or cross-infected The heory of chilling by cold water vapour explains the ifficulties as follows —

actors favouring development of catarrh

1 January and February the months of cold wet weather
2 Estuaries air saturated with cold vapour, cold mists
3 Night air no sun, cold water vapour, mists when the ir is still
4 Barracks and public schools extreme ventilation ractised as a ritual especially in dormitories
5 Sterile epidemics explained by widespread atmospheric auses

Factors adverse to development of catarrh

1 Arctic air cold and dry
2 High altitudes also cold and dry, at 25,000 ft vapour pressure is 1/12 that at sea level
3 Life in ships at sea (crowded quarters and hot engine-room should favour infection)
4 Life in the trenches (crowded dugouts should favour infection)
5 Sleeping in the open air possibly the sleepers became inured to irritating vapour (as tobacco and snuff users become inured to irritants)
6 Solaria, tropics sunshine warms vapours and mists

Doubtful factors

1 Overheated rooms seem to be a factor in towns, but not in ships, submarines or the hot rooms of Turkish baths Possibly a congested mucosa is more susceptible to irritation, thus the sudden chill of going into the cold night air may play a part

2 Overcrowded rooms Body odours are non-irritant, and carriers cannot convey a sterile complaint No severe epidemics have arisen in the overcrowded shelters Sneezing of infected mucus by a patient with infective catarrh would, of course, cause spread, and the initial dry stage of the infection might be confused with non infective catarrh

PREVENTION

If the theory of chilling by damp air was confirmed by experiment our preventive measures would have to be modified At present we concentrate on avoiding, catching and killing organisms and extreme ventilation is believed not only to be harmless but to sterilise the air and to harden those exposed to it The first essential is a team research, carried out in a suitable locality and at the right time of year—Liverpool in January would be suitable The team should include a meteorologist, a bacteriologist and a clinical observer with a knowledge of oto-rhino-laryngology There is no need, however, to wait for this, or even for the results of experimental work because we can modify for the months of January and February only the precepts of extreme ventilation and exposure which have given admirable results in other climates and even here in other months This does not mean a shut-window policy but only warmth combined with moderate ventilation In other words we should protect ourselves against wet cold as we protect ourselves against extreme sunshine

It seems strange that surgeons take pains to ordain the minutest details of the environment of a patient during an operation, but hand him over, as soon as their work is done, to an environment not under their control A patient goes to hospital for an operation—herniotomy let us say—and is allocated to a bed immediately under the ward windows, and he becomes mysteriously infected with pneumococci There is no reason why wards should have windows that open at all they should be air conditioned like modern state-rooms in liners with the balcony as a prescribed treatment It seems illogical for physicians to regulate diet, exercise, special treatment and drugs, and then, even in cases of pulmonary disease allow the nursing staff a free hand in the regulation of ventilation

The time will come, I hope when we shall all take more interest in the general principles of climatology and meteorology and particularly in the weather of our own localities As things are, although many observations are taken, they are kept in the records of the health offices and quoted only in annual reports They could be valuably used for making local forecasts and for the information of a central weather therapeutic bureau Our object should be to make the fullest use of the sunny days for the greatest number and to guard them, as far as possible, against the bad effects of the worst days, and their sequelæ

SUMMARY

A form of non-infective catarrh, "epidemic" in wet cold months, is differentiated from common colds and ascribed to the irritation of very cold water vapour in the air

The damaged mucosa is liable to auto-infection or cross-infection, thus developing one of the various kinds of infective catarrh

Avoiding, excluding or modifying the causative irritant will prevent the condition

COARCTATION OF THE AORTA

STENOSIS of the isthmus of the aorta first reported by Morgagni in 1760, is the subject of a paper by Montesano [1] Such coarctation has been observed either
newborn when it is congenital and usu
with other malformations incomp
adults as an acquired lesio
due to spread of fib
tion of the ductu
formation into
the stenosis is
of the ductu
isthmus i
opening o
grade ur
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[2] Stuart Harris and others Ibid, 1940, 1, 205

[1] Mo

the death of her father 5 years before Routine physical examination elicited the following signs numerous palpable pulsating arteries on the chest wall, both back and front, a systolic thrill over the lower sternum and also behind, between the midline and the inner edge of the left scapula, a normal area of cardiac dullness, and, on auscultation, a harsh systolic murmur and a soft diastolic murmur The diastolic murmur was heard only over the xiphisternum, but the systolic murmur was audible over a wide area extending from the epigastrium, where it was loudest, up and to the right, over the right shoulder, and down the back between the vertebral column and the inner edge of the left scapula The blood-pressure was decidedly higher in the arms than in the legs (215/70 and 217/75 mm Hg, as compared with 130/69 and 112/68), the pulses in the dorsalis pedis arteries were felt with difficulty Radiography of the chest showed erosion or grooving of the ribs, caused by dilatation of the intercostal arteries The heart was slightly enlarged

THE CARDROOM EIGHTY YEARS AGO

THE first account of cardroom asthma or byssinosis (discussed in a leading article) appeared in THE LANCET in 1863 (2, 648) The writer, Jesse Leach, was a certifying surgeon under the Factories Act at Heywood Mills, Lancashire, his description has the vigour of medical writing of the period

The following remarks more particularly apply to operatives working in low, narrow, ill ventilated rooms, where Surat cotton is used

The first process the raw cotton undergoes is the mixing of one staple with another Much dirt and dust is disengaged in this operation The respiration is affected from the dust irritating the respiratory passages of the mixers, and coughing and sneezing are the frequent consequences, which disengage from the bronchial membrane a quantity of slaty coloured expectoration, which, when placed under the microscope, is seen to consist of very fine short fibres of cotton in air bubbles and mucus The sneezing is occasioned by the same material irritating the olfactory nerves during nasal breathing The arms and hands of the mixers are not infrequently affected with a cutaneous rash, much resembling nettle rash This may partly arise from fine sand and short fibres of cotton destroying the epidermis, and irritating by their presence the true skin Their complexion is pale and sickly After passing from the mixers, the cotton passes through the hands of the willowers and scutchers When ventilation is not assisted by ventilating chimneys of tin or wood, which take off more effectually the dense atmosphere with which these rooms are charged, the willowers and scutchers suffer in the same manner as the cotton mixers From the immense velocity of the machines used, the revolutions being 1500 per minute the quantity of short fibres of cotton set afloat in these rooms is very great It would be difficult to recognise a man at twelve yards' distance, from the density of the floating fibres, modified, of course, very much by a wet or dry day The strippers, grinders, and card room hands are engaged in the next process of cotton manufacture They mostly suffer from a spasmodic cough, sore throat, expectoration of blood, pneumonia, and confirmed asthma, with oppression of the chest

NASTY MEDICINE —Mr Henry P Crocker, of Windsor, Ontario, advises that nauseous medicines should be taken wough a straw, placed well to the back of the mouth
we his way, he says, " medicine will be no more unpleadipl
The to take than drinking water " This old trick is
210 (ned in most textbooks on therapeutic nursing,
births), not always completely successful, partly because
ory nerve-endings extend to the pillars of the
oharyngeal wall and even the epiglottis, and
WATSON se it is difficult to prevent a little of the
put a new ing the tongue when the head assumes its
market It
their earlier P BURYS have installed the necessary
machine has a ra facture Michel skin clips which were
operated from A C lance and afterwards in Germany
ment being simple a Hanburys are using is the same
and the whole mach ips, and all sizes, 12, 14, 16 and
may be carried in the They are also making Kifa skin
in about three minute of the Michel clips, which
tube of 1 5 mm focus an manufacture, although
on continuity of use Th
as opposed to being merely
and set up wherever there is

Appointments

BURKE ROSALIE M R C S temp asst M O (maternity and child welfare) for Coventry

CLARK, WILLIAM M B Glasg, D P H district tuberculosis M O for co Durham

COHEN, BEN, M B Glasg registrar at the Central London Throat, Nose and Ear Hospital

FREER, J L L M S S A, D M R E hon radiologist to Lincoln County Hospital Lincoln

GOLDSTONE B W M B Lond F R C S E R S O at Addenbrooke s Hospital, Cambridge

LATTO, CONRAD M B Edin F R C S E R S O at Prince of Wales Hospital Plymouth

SMITH HAROLD, M D Western Ontario F R C S E R S O Beckett Hospital Barnsley

STANSFIELD, ALLEN, M B Birm, D P H temp asst school M O for Northampton

WESTWATER, J S M D Edin, D P H M O to the Department of Health for Scotland

Births, Marriages and Deaths

BIRTHS

BARLOW —On June 1 at Harpenden, Herts, the wife of Mr Donald Barlow M S —a daughter

GOTLA —On May 30 at Fulmer, Bucks the wife of Captain Du Gotla, R A M C —a son

ROBINSON —On May 22 at Maidstone, the wife of Captain H J Robinson, R A M C —a son

SPALDING —On May 27, at Farnborough, Kent, the wife of Mr J E Spalding, M S —a daughter

MARRIAGES

PATON—DIMMOCK —On May 20, at Catterick, David Paton capt R A M C, of Hamilton, to Phyllis Dimmock, of Beaconsfield

TAYLOR—LATTER —On May 24, at Chelsea, Arthur Gordon Taylor, L D S Eng, St Albans, to Rosalind Brackenbury Latter, M R C P

WALKER—MOYCE —On May 27, at Wanstead, John Jeal Walker surgeon lieutenant R N V R, to Ellaline Jessie Mary Moyce

DEATHS

BROOK —On May 26, at Pennard, William Frederick Brook, F R C S

GUNN —On May 4, John William Cormack Gunn, M B Edin professor of pharmacology and dean of the faculty of medicine in the University of Cape Town, aged 52

MANSELL —On June 1, at Lambeth Hospital London, Edward Mansell, B M Oxfd, F R C P aged 40

NICHOLSON —On May 26, in Edinburgh, Harry Oliphant Nichol M D Aberd F R C P E

WAKEFIELD —On May 27, at Haslemere, Thomas Wakefi M B Camb, aged 90

On the advice of their food rationing (special diets) adviso committee the Ministry of Food has decided that supplies of cheese will not be made available for diabetics

In their article of May 3 Dr Lipschutz and Dr Varg referred to the synthetic desoxycorticosterone acetate t used as " doca " Messrs Ciba point out that this w supplied by their associated firm in Basle, and that Do the trade mark of another firm Percorten is the registe trade mark for Messrs Ciba's desoxycorticosterone acetate

" In the shadows that are deepening over Europe t lights of learning are fading one by one The conception knowledge as an international responsibility has vanishe The free flow of ideas across boundary lines between labor tories and universities has dried up Everywhere the exige cies of the war have erased the possibility of intellectual ar cultural life as that term was understood a few years ago Over all the continental universities hangs the pall of u certainty and fear The contact with contemporary life h been abruptly broken Even when fundamental research being continued, publication has largely been abandoned postponed In such surroundings scholarship withers ar only through heroic struggle keeps itself alive Whe the German Minister of Justice tells the Association of Un *versity Professors* that the old ideal of objectivity was nonsen and that 'today the German university professor must as himself one question does my scientific work serve th welfare of National Socialism ?' he is voicing a doctrir which if broadly applied spells the end of Western scientif thought When relativity becomes 'an example of charac teristically perverse Jewish theory,' and genetics is a battl ground for the 'Aryan theory,' then the end of the day he come in which Claude Bernard could say 'I give sma thought to where the truth will lead me, provided that I fin it' "—RAYMOND B FOSDICK in the report of the Rockefelle Foundation for 1940, pp 10–13

ORIGINAL ARTICLES

BRAIN AND MIND

THE PHILOSOPHICAL APPROACH TO PSYCHIATRY

By W Russell Brain, D M Oxfd, F R C P

PHYSICIAN TO THE LONDON HOSPITAL AND MAIDA VALE HOSPITAL FOR NERVOUS DISEASES

The relationship of the brain and the mind has exercised philosophers for centuries, but we do not yet know enough about the functions of either to describe in any detail how they are related It may be thought therefore that the question is an academic one, and any further discussion of it a waste of time Neurology and psychiatry can look back upon solid achievements, accomplished without a definition of the relationship of their respective subject matters, and there are no signs that their rate of progress is diminishing Why, then, bother with philosophy ? There is much to be said for this point of view provided that its tacit basis remains unchallenged This is that both neurology and psychiatry should be allowed to develop and employ their own concepts as they may find necessary This has been the recognised condition of progress in all the sciences for many years, as long as it has been found impossible to express the concepts of one science entirely in terms of another

Recently there has been increased expression of the view that though it is not at present possible to translate cerebral function into mental happening, nevertheless the mental is potentially capable of being interpreted in terms of cerebral physiology The effect of this belief is to subordinate psychology to neurology in interest and importance Indeed, if it be true, the need for psychology at all is the measure of our ignorance of neurology, and, as neurological knowledge becomes more and more complete, psychology as a separate science will gradually disappear There is nothing new in these ideas, but their recent restatement and their practical implications for the future of psychological medicine make it desirable to reconsider them It seems possible to reduce the views which are held on the relationship of brain and mind to two—psychophysical parallelism and interactionism

PSYCHOPHYSICAL PARALLELISM

The first view sees mental functions as running parallel with nervous functions They may be regarded as two aspects of the same thing, one seen from within and the other from without, as it were , or the mental function may be looked on as bearing somewhat the same relation to the nervous function as a magnetic field to the electric current which it accompanies In either case the mental function is considered as subordinate to the laws governing the nervous function These are known through the study of neurophysiology, and are seen in their simplest form at the level of the spinal reflex arc But the behaviour of the nervous system at higher levels, right up to the cerebral cortex is conceived as being of the same kind as at the spinal level, and composed of reflex activity, however long its paths and however complex its facilitations and inhibitions Consciousness, of course, is not present at the spinal level, but does accompany nervous activities at some higher levels Now, though the reflex responses to a similar stimulus may differ at different times, they are none the less inevitable, being determined only by the stimulus and the state of the nervous system at the time Since the activity of the nervous system at all levels is regarded as reflex, and therefore physically determined, consciousness can determine nothing it is merely an epiphenomenon parallel with nervous activity, in terms of which it will ultimately be explained Then not only psychology but much else will be interpreted in terms of cerebral functions Thus Lashley[1] looks forward to a day when we shall understand " the physiologic basis of logic " because it will be " cast in terms of elementary nervous activities "

As we shall see later, psychophysical parallelism is not a neurological theory it is a philosophical theory which happens to be held by some neurologists It is open to two main objections, one metaphysical the other logical The metaphysical objection was stated by Dr Johnson two centuries ago in Rasselas with a force and conciseness which have never been bettered The passage occurs in chapter 48, entitled " Imlac discourses on the nature of the soul," and the speaker is Imlac .

> " ' Matter can differ from matter only in form, density, bulk, motion and direction of motion to which of these, however varied or combined, can consciousness be annexed ? To be round or square, to be solid or fluid, to be great or little, to be moved slowly or swiftly one way or another, are modes of material existence, all equally alien from the nature of cogitation If matter be once without thought it can only be made to think by some new modification, but all the modifications which it can admit are equally unconnected with cogitative powers ' ' But the materialists,' said the Astronomer, ' urge that matter may have qualities with which we are unacquainted ' ' He who will determine,' returned Imlac, ' against that which he knows because there may be something which he knows not , he that can set hypothetical possibility against acknowledged certainty, is not to be admitted among reasonable beings ' "

The logical objection to psychophysical parallelism can be expressed even more briefly If the utterances of its advocates are purely reflex actions, whether attended by consciousness or not, we need not bother to consider whether they are true , for truth is not a property of reflex action Such views are inevitable for those who hold them and our acceptance or rejection of them is equally inevitable for us Truth has no meaning, and the theory, therefore, cannot be true

INTERACTIONISM

So far we have not inquired whether physiology affords any support for the view that mental activities are potentially capable of explanation in terms of cerebral functions Have the two centuries of physiological research since Johnson's day done anything to invalidate his metaphysical judgment ? On this issue there is no higher court of appeal than Sherrington,[2] who has recently added to the debt which modern scientific thought owes him by expressing his views on some of the philosophical implications of neurophysiology

> " The search in that (energy) scheme," he writes, " for a scale of equivalence between energy and mental experience arrives at none . . The two, for all I can do, remain refractorily apart. They seem to me disparate , not mutually convertible, untranslatable the one into the other . . I would submit that we have to accept the correlation, and to view it as interaction , body ⟶ mind Macrocosm is a term with perhaps too medieval connotations for use here , replacing it by ' surround ' then we get
>
> ' surround ' ⇄ body ⇄ mind "

If, with Sherrington, we accept interaction as the relationship between body and mind, reflex action is represented by " surround " ⇄ body, without the intervention of mind If, in addition, mind is introduced into the cycle, presumably it has functions which cannot be performed by reflex action alone With what are these functions concerned ? Sherrington, writing his philosophy with the pen of a poet, supplies the answer

> " Mind, for anything perception can compass, goes therefore in our spatial world more ghostly than a ghost Invisible, intangible, it is a thing not even of outline , it is not a ' thing ' It remains without sensual confirmation, and remains without it for ever Stripped to nakedness there remains to it but itself What then does that amount to ? All that counts in life Desire, zest, truth, love, knowledge, ' values,' and, seeking metaphor to eke out expression, hell's depth and heaven's utmost height Naked mind "

PHYSICAL AND MENTAL CAUSES

Interactionism involves a more complex relationship between brain and mind than psychophysical parallelism, for it implies that mental disorder may arise at two levels, the physical and the mental There is little difference of opinion about what constitutes physiogenic mental disorder This comprises the mental symptoms of focal and diffuse lesions of the brain of all kinds, and it is increasingly probable that schizophrenia and cyclothymia are to an important extent caused by disorders of cerebral function too fine to be detected by present pathological methods

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[1] Lashley, K. S *Arch Neurol Psychiat* 1938, 37, 371

[2] Sherrington, C S Man on his Nature London, 1940

When however we ask whether mental disorder is ever psychogenic we find a sharp cleavage of opinion Few would say that mental factors play no part in the causation of mental illness, but many regard psychogenesis as of quite subordinate importance Neurosis is attributed to an abnormal affective state of cerebral origin, mental experiences being merely one among many possible precipitating factors On this view much psychotherapy and perhaps the whole of psycho-analysis and its derivatives are concerned with symptoms and not with causes

It would be surprising if this were true The predominant feature of the human mind is surely its immense plasticity, permitting a great variability of response to stimuli A child may be exposed to all manner of emotional shocks and suggested fears It would be strange indeed if it never learned the wrong answers to emotional as well as to intellectual problems, or if these early errors never persisted into adult life What is the content of neurosis but a disorder of " desire, zest, truth, love, knowledge, ' values ' " ? If the normal enjoyment of these modes of being is a mental function, why need a cerebral disorder always be invoked to explain their perversion ? If, on the other hand, mental experience leads to faulty emotional reactions, the interpretation and readjustment of these can be made only in terms of mental experience The truth of this is reinforced by the light which analytical psychology, using this term in its broadest sense, has thrown upon the mental processes of normal people The unconscious motivation of conscious acts in normal people does not require an unknown affective disorder to explain it, nor can it be explained in terms of physiological dispositions, into which, being mental, it is in Sherrington's term " untranslatable " Over a wide range the difference between neurotic and normal is one of degree only These are the justifications for a psychotherapy based on analytical methods This is not a defence of any particular theory of analytical psychotherapy On the time-scale of human thought this is in its infancy We should not be surprised if, like the Freudian infantile sexuality, it is both polymorphous and occasionally perverse

If both mental and physical causes of mental disorder exist it may sometimes happen that either will produce a similar mental symptom and difficulties in diagnosis may thus arise For example, a head injury, as a mental experience, may cause an anxiety neurosis, or by leading to brain injury it may cause a state of abnormal apprehensiveness of cerebral origin It may be extremely difficult to say whether such an emotional state occurring after head injury is psychogenic, physiogenic, or both These diagnostic difficulties, however, call for better methods of diagnosis, and do not invalidate the distinction between mental and physical causes

The example quoted illustrates the obvious but important fact that these are not mutually exclusive From the ætiological standpoint a psychotic or neurotic patient is like a point with two coordinates, the physical and the mental, the relative size of which must be determined individually in every case At one extreme the physical coordinate will be large and the mental small, as in general paralysis At the other extreme the reverse will be the case and we shall speak of the disorder as psychogenic, while still not omitting to look for physical contributory factors

THE NOMINALIST SOLUTION

It has often been pointed out that conflicts of thought are not infrequently the outcome of clashes of tempera-
ment Aristotelian and Plato realist and idealist,
materialist and animist, and libertarian,
extrovert and introvert, schizothyme,
from the philosopher to th
the
as variants of William J

tough and the tender To the one, things seem more fundamental than thoughts , to the other, the reverse The tension that comes from this opposition is to be valued rather than deplored In Blake's profound words " without contraries is no progression " Nevertheless philosophy strives to escape from the relativity of outlook conditioned by temperament, training and specialised interests At the least it recognises that relativity, and from this awareness springs a tolerance which allows to every science its own conceptual system In this spirit of scientific nominalism psychological medicine, without being committed to any view of the relationship of mind and brain, must maintain its autonomy as a science and its right to use whatever concepts seem to it valid and valuable, even if, like the wave and particle theories of light, they appear for the time being mutually incompatible

The field for cooperation between neurology and psychiatry on this basis is wide, and it will be found that more concepts are applicable to both than has sometimes been thought This is true, for example, of unconscious mind and of symbolisation Both of these hypotheses essential to analytical psychotherapy are also inherent in neurology Unconscious mind has been described as a contradiction in terms, but is so only if mind is first arbitrarily identified with consciousness Sherrington [2] recognises " a grade or grades of mind which we do not experience " and stresses the essential part played in the preliminary phases of perception by " unconscious inference," a " part of the subconscious " which he distinguishes from the Freudian subconscious Symbolisation also is of the essence of perception " When we ' perceive ' what we name ' a chair,' we are interpreting a certain group of data (modifications of the sense organs) and treating them as signs of a referent " [3] Even at the reflex level a conditioned stimulus is a sign which stands for the original stimulus Aphasia, agnosia, hallucinations, some hysterical symptoms, phobias and paranoid delusions are all in different ways disorders of the relation between subjective and objective, symbol and referent Such examples might be multiplied Modern scientific philosophy makes little use of causes, which have been largely replaced by correlations The discovery of correlations between the cerebral and the mental promises to be a more fruitful research than the attempt to explain the mind in terms of the causal laws of the body

Although the study of brain and mind requires different and uninterchangeable concepts this in itself is no reason why neurology and psychiatry should be practised by different specialists Indeed there are obviously great advantages in their close association, perhaps even their fusion, in training and a considerable part of practice Nevertheless it seems likely that analytical psychotherapy will always involve a further degree of specialisation within psychiatry, demanding for what is perhaps the most exacting task in medicine special qualities of temperament, additional training and unlimited experience

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[3] Ogden, C K and Richards, I A The Meaning of Meaning, London, 1927

ANOTHER BUGGY RIDE —In a previous book Dr Arthur E Hertzler showed us that he had kept his eyes and ears open during a long life spent in country practice In " The Doctor and his Patients " (John Lane, The Bodley Head 12s 6d) he offers us more of the ripe fruits of his experience Writing, it seems, with an enviable facility, he discusses, from the point of view of that privileged observer the family doctor, the components of the family itself His main theme is the married state and why it comes to grief so often He contends that one of the chief causes of failure is that sexual desire is too often mistaken for love and that successful sexual congress is commonly regarded as the acme of love when, in fact, it has nothing to do with it A satisfactory marriage, paradise earned, is only to be achieved by constant thought effort and self-discipline Dr Hertzler is a realist with many a grim story to unfold, but the grimness is relieved by abundance of humour and there is no lack of wisdom among the wisecracks

THE UNDESCENDED TESTICLE[1]

BY R E SMITH, M B Camb, F R C P
MEDICAL OFFICER TO RUGBY SCHOOL AND LAWRENCE SHERIFF SCHOOL, AND PHYSICIAN TO THE HOSPITAL OF ST CROSS, RUGBY

THE importance of the partially descended testicle reaches far beyond the bounds of surgery. A boy with this malformation may be debarred from the public services particularly the fighting services, and he runs a risk of complications, real though often grossly exaggerated in textbooks Animals so deformed are an economic loss to the stockbreeder One of the pioneers who studied this subject was John Hunter, who asked his brother " to take every opportunity of learning exactly the state of the testis before and after birth " From William's observations, John stated that the testicle as a rule left the abdomen and descended into the scrotum in the eighth month of fœtal life

My own interest in the undescended testicle is chiefly concerned with the natural history Observations have been made since 1931 on boys attending two schools one with approximately 600 boys from 13 to 18 years of age and the other with 400 boys aged from 9 to 18 Though the population is changing continuously it has been possible to follow the progress of most of 50 cases for periods varying from 2 to 9 years

AGE-INCIDENCE

Grey Turner in 1937 stated that he had never been satisfied that descent occurs later than the age of 3 years but he added " perhaps detailed information from school medical officers, who have the opportunity of examining large numbers of young boys, may justify some other conclusion " Russell Howard says that "An imperfectly descended testis will occasionally descend into the scrotum at puberty " A census of the 1000 boys under my care was taken in 1937 and again in 1940, the findings are set out in table I

TABLE I—FINDINGS IN SCHOOLBOYS EXAMINED IN 1937 AND IN 1940

Age (yrs)	No of boys	No with u t	Known to have had u t at some time	U t with herniæ
		First examination (1937)		
19–20	2			
18	63			
17	157		1 (0 6%)	
16	196		1 (0 5%)	
15	185	4 (2 2%)	7 (3 8%)	1 (0 5%)
14	187	3 (1 6%)	5 (2 7%)	2 (1 1%)
13	76	3 (4%)	3 (4%)	2 (2 3%)
12	63	1 (1 6%)	2 (3 2%)	
11	31			
10	12			
9	10			
8	2			
Total	984	11 (1 1%)	19 (1 9%)	5
		Second examination (1940)		
18–19	62	1* (1 6%)	4 (6 4%)	
17	138		2 (1 5%)	
16	165		3 (1 8%)	
15	183	3 (1 6%)	5 (2 7%)	
14	157		5 (4%)	
13	125	2 (1 6%)	5 (4%)	
12	49	2 (4%)	2 (4%)	
11	45	3 (6 6%)	4 (8 8%)	
10	28	1 (3 6%)	1 (3 6%)	
9	20	1 (5%)	2 (10%)	
Total	972	13 (1 3%)	33 (3 3%)	
14 and over,	705	4 (0 6%)	19 (2 7%)	
13 and under	267	9 (3 3%)	14 (5 4%)	

U t = undescended testicles
* Operation for hernia at age of 3 years

The first examination showed that all of 418 boys aged 16–20 and all of the smaller group of 55 under 12 years had fully descended testicles One boy aged 18, included in the table, had his testicle brought down by operation · 11 boys out of a group of 511 between the ages of 12 and 15 had undescended testicles, an incidence of 2 2% in the group Comparison of the third and fourth columns shows that descent occurred on 8 occasions spontaneously in 7 and by operation in the boy aged 17 Those in the last column are segregated because it is known that an associated hernia makes it probable that the testicle will not descend spontaneously

TABLE II *—DETAILS OF 27 CASES OF SPONTANEOUS DESCENT OF TESTICLE

Case No	Age at descent (yrs)	Bilateral (B) or unilateral (U)	Onset of puberty (yr)	Size of testicles	Remarks
1	16	B	14	Normal	Pluriglandular dystrophy Obese
27	16	U (R)	12½	R = ½L at 16½	
37	16	U (L)	14	L = ½R	
7	R 14½ L 15	B	15	Normal	
10	14	U (R)	15	Equal	
16	Before 14	U (R)	14	Equal	
17	14½	U (L)	15	Equal	
25	14	B	14½	Normal	Obese
30	14	U (L)	12	L = ½R at 14 L = ¾R at 15½	
34	13½	U (L)	14	Equal	
35	R 14 L not desc at 14	B now U (L)	14	Equal but small	
44	13½	U (R)	13	R = ¾ L	
36	13	U (R)	Not begun at 14	Equal	Opn for L I H at age 7
19	13½	U (R)	13½	R = ½L at 13½ R = ¾L at 15½	
18	13¾	U	13½	Equal	
6	13	B	12½	Normal	
4	13	B	Later than 17½	Normal	Obese
3	R 12½ (opn) L 13¾ (spontaneous)	B	14½	Normal	Obese
2	R 13 L 13¾	B	14		Obese Opn for L I H at age 2
5	12	B	13½	Normal	
26	12	U (R)	12½	Equal	
28	12½	B	13½	Normal	
29	12	U (L)	11½	L = ¾R at 14 Nearly equal at 15	
32	12	U (L)	12½	L = ¾R at 13 Nearly equal at 14	
33	R not desc at 14 L 12	B now U (R)	13½	L normal	
41	11	U (R)	Not begun at 11½	Equal	Obese Opn for R I H at age 8½
9	11½	U (L)	12½		Left district when 12½

* Cases 1–24 in tables II and III have been fully reported in *Arch Dis Childh* 1939, 14 1

The second examination showed that the principle is maintained undescended testicles are less common as age progresses If puberty is taken as occurring roughly at 13–14, and the boys are separated into two groups by making the 14th birthday a dividing line the difference is seen at once It must be remembered that the first examination of many boys is not until puberty, which would explain why the percentage for those over 13 is less than for the younger group

McCutcheon's statistics, based on observations for 19 years, are even more favourable to the older group In 1656 boys over 15 he found the testicle undescended in 13 (0 8%), and of 3386 under 15 years, 315 (9 4%) had undescended testicles

The latest age at which a testicle can descend spontaneously is not known Sir Robert Hutchison tells me that he knew a man in whom descent occurred while he was an undergraduate at Oxford (an event duly celebrated by a party) Table II shows that puberty is a common age for spontaneous descent, and the figures confirm those of Johnson who in a study of 31,609 boys joining a club in New York found that spontaneous descent took place in 300 of 544 with undescended testicles, and of these, 216 descended between the ages of 11 and 14

DESCENT IN RELATION TO PUBERTY

Table II contains details of 27 boys in whom one or both testicles have descended spontaneously, table III those of 23 boys in whom descent has not taken place Cases 1, 2, 3, 4, 25, 41 in table II form a small group in which some endocrine disorder was probable

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[1] A Hunte .e Royal College of

The age of descent was uncertain in case 16 Of the 10 bilateral cases (excluding case 1 but including case 3), descent occurred bilaterally in 7 and unilaterally in 2 more, in whom descent of the other testicle is a reasonable expectation Descent before puberty was common, the average interval being a year Case 6 was the only one in which descent took place after puberty, which occurred at 12½

TABLE III—DETAILS OF 23 CASES WHERE DESCENT DID NOT TAKE PLACE

Case No	Present age (yr)	Bilateral (B) or unilateral (U)	Onset of puberty (yr)	Remarks
12	23	U (R)	14	Atrophic testis removed at 15, opn refused at 13½
14	21	U (R)	13	4 courses of Pregnyl unsuccessful Testis transposed surgically in scrotum at age 16 R = ½L Postop course of pregnyl, later R = L
11	19	U (R)	14	Testis at ext ing ring
8	18	B	14	Testes at int ing ring
15	18	U (R)	13	3 courses of pregnyl unsuccessful Testis reascended ant to ing canal, lowered surgically Postop course of pregnyl R = L
23	18	U (R)	14	Opn for R I H at 14 Testis at ext ing ring
24	18	U (R)	13	Opn for R F H at 8 Testis in sac transf to neck of scrotum 4 courses of pregnyl unsuccessful
39	18	U (R)	14	Twin, 8 mths prem, 3 lb at birth Testis at ext ing ring
20	17	U (R)	15	Testis at int ing ring
21	17	U (R)	15	Testis at int ing ring R = ½L Opn for R I H at 3
22	17	U (R)	14	R I H Testis in hernial sac in canal
31	16	U (L)	starting at 16	Testis outside ext ing ring
42	16	U (R)	14	Small R testis between int and ext rings at 15½ Impalpable at 16
13	15	U (L)	11½	L testis impalpable at 15
33†	14½	U (R)	13½	L descended at 12, R at ext ing ring
35†	14	U (L)	just starting	R descended at 14, L at neck of scrotum Course of pregnyl at 13, no effect
47	14	U (R)	13½	Testis at ext ing ring
48	14	U (R)	13	R testis removed at 7 because undescended
43	13	U (R)	12½	Testis at neck of scrotum
38	12	U (R)	12	R below ext ing ring
40	12	U (R)	not started	Testis can be moved in circle of 1 in diam over pubic tubercle
45	10	B	do	R at int ing ring, L impalpable
46	10	B	do	Neither palpable

† Cases 33 and 35 are included in tables II and III

Of the 15 unilateral cases (excluding cases 18, 33, and 35) the right testicle descended in 8 and the left in 7, the average age being 13 In 10 instances this was before puberty, usually 6–12 months In 3 of the 6 others in whom descent took place after puberty, puberty occurred early, at 11½, 12, 12½, but in the 3 others puberty was at 13, 13½ and 14 and descent at 13½, 13¾ and 16 respectively Descent at 16 and so long after puberty is exceptional In cases 4 and 17, the teeth generally and the canines particularly were late in erupting

POSSIBLE INDICATIONS OF FUTURE DESCENT

Obesity—The 6 already mentioned (cases 1, 2, 3, 4, 25 and 41) were the only boys who were unnaturally fat Bilateral descent occurred in all except case 3, in whom the surgeon had already transferred the right testicle to the left half of the scrotum Two of the rest (cases 2 and 41) had had an operation for an inguinal hernia on the same side as the undescended testicle In case 1, some pluriglandular dystrophy was present and descent occurred at 16, two years after the onset of puberty In cases 2, 3, 4, 25 and 41 obesity was marked and of the Frohlich type In cases 1, 2 and 4 both testicles descended spontaneously and puberty followed after an interval which on the average was over a year This sequence of events would probably have occurred in case 3 if there had been no operation In case 4, a highly intelligent boy in whom the fat was distributed as in the female, puberty was delayed and the pubic hairs were still extremely sparse even at the age of 17½ This boy had never had nocturnal emissions or any other sign of spermatogenesis Only in 1 boy in this group (case 41) was the testicle unilaterally undescended He had had a right inguinal hernia cured by operation when aged 8½, and the right testicle descended when he was 11

Johnson found Frohlich's syndrome associated with 17 bilateral and 11 unilateral cases in his series of 544 He does not mention whether the association is a favourable sign

Hernia or previous operation for hernia—According to Mimpriss, of 137 patients who were operated on from 1927 to 1934 in St Thomas's Hospital, 85% had co existent hernial sacs These were discovered at operation and it is improbable that they would have been found by clinical examination Of the 48 cases reported in tables II and III only 6 had clinically recognised herniæ on the same side as an undescended testicle (cases 2, 21, 22, 23, 24 and 41), and of these the only 2 (cases 2 and 41) in whom spontaneous descent occurred had generalised obesity In the others the testicle has remained fixed or has atrophied In case 24 the operation was performed when the patient was aged 8 The testicle, which was in the femoral canal, had a short cord and was transposed to the top of the scrotum, but it completely atrophied Case 36, who had a right undescended testicle, was operated on for left inguinal hernia at the age of 7 It would be expected that a testicle embedded in a hernial sac, which is itself fixed by connective tissue to the vas and surrounding structures in and out of the inguinal canal, would be incapable of movement The sooner operation is performed the better

Herniæ may make their appearance during treatment Spence and Scowen (1935) noted this 5 times in 33 patients receiving hormone therapy in addition to 4 who were known to have had herniæ before treatment started In case 22 a hernia first appeared at 14½, although the testicle had been noted on several occasions as being in the right inguinal canal The testicle remains as it was 6 years ago

Unilateral and bilateral non-descent—Descent took place spontaneously in 27 boys (table II), 15 of whom had unilateral and 12 bilateral affections Of the boys with undescended testicles (table III), only 5 were under 14, 3 with unilaterally and 2 with bilaterally arrested organs It is best to exclude these from our present comparison, because descent later is highly probable Of those who were 14 and over, non-descent originally was unilateral in 15 and bilateral in only 3 In case 8, hope for spontaneous descent now that the patient is 18 has been given up, one testicle has descended in both of the others (cases 33 and 35), and there is reasonable hope that the second testicle will descend in case 35 and possibly also in case 33 This establishes the fact, often quoted, that bilaterally affected testicles have much greater chances of descent than unilateral ones We could go further and say that if arrest is bilateral non-descent at puberty is exceedingly rare

This does not mean, however, that unilaterally undescended testicles rarely descend, for descent occurred spontaneously in 16 such cases (all ages included), compared with 15 unilateral cases aged 14 and over which failed to descend, 3 cases in the undescended group were under 14, and in these descent may still take place The unilateral undescended testicle, uncomplicated by a clinically recognisable hernia, has an almost equal chance of descending spontaneously at about puberty or of remaining undescended

Anatomical considerations—In my own series, the surgeons operating on cases 14 and 15 both reported that the testicle was anterior to the inguinal canal—in other words, was ectopic Case 19 has an interesting history it was known that when he was 13 his right testicle was lying opposite the lower ring of the inguinal canal, at that age, while in a camp, he stretched out vigorously and got acute pain in the inguinal region, and he noticed after this that his testicle had descended It was then only half the size of its fellow, but it has grown and is now almost of normal size

Spence and Scowen (1938) have tried to differentiate between testicles in the inguinal canal and in the superficial inguinal position by the following criteria

(*a*) A superficial inguinal ectopic testis lies more superficially than one situated in the inguinal canal

(*b*) When the testis is moved upwards and outwards in the direction of the canal, the superficial inguinal ectopic testis remains in the superficial position and becomes more obvious, whereas one situated in the canal will occupy a position deeper in the canal and thus will become less easily palpable.

(c) A testis situated in the canal cannot be moved towards the femoral region, whereas this may be possible in the superficial inguinal type.

(d) When a testis situated in the canal is moved downwards it will travel in a direct path towards the neck of the scrotum, whereas one situated in the superficial inguinal region will tend to move slightly lateral to the neck of the scrotum.

For the last two years I have studied my cases with these anatomical points in mind, and I have concluded that the first and the two last criteria are valid but not the second. Often a testicle obeying (*a*), (*c*) and (*d*) if moved upwards and outwards in the line of the canal becomes more prominent as though it cannot get further than the internal ring upwards or the external ring downwards.

It may be concluded that obesity is a favourable accompaniment, and descent usually takes place before puberty. Bilaterally non-descended testicles nearly always descend before puberty; approximately half of the unilateral cases descend at about puberty.[2] A clinically recognisable hernia or a previous operation for one is an almost certain sign that the testicle will not descend, unless it is in a fat boy. Further evidence is required to confirm Spence and Scowen's claim to differentiate between testes in the inguinal canal and the superficial inguinal ectopic testis, the latter of which in their opinion rarely descends spontaneously. I have tried to collect some evidence to prove or disprove whether prematurity is a cause of non-descent but the war put an end to this research.

RISKS OF LEAVING THE TESTICLE UNDESCENDED

The aberrant testicle is supposed to be particularly liable to inflammation, trauma, torsion and malignant disease. Little mention is made of atrophy. In my ten years as a school medical officer among the 600 boys who are resident there have been 7 cases of torsion of the spermatic cord and 2 of the hydatid of Morgagni; 1 of sarcoma of the testicle; 2 of large hydroceles, 1 being after mumps; and 2 of hæmorrhage from the pampiniform plexus, probably traumatic. All these have occurred in normally descended testicles. On the other hand, there have been no complications except atrophy among those with undescended testicles.

Torsion.—A long mesorchium is supposed to facilitate the torsion of undescended testicles. When torsion of an undescended testicle takes place operation is performed because of the resemblance to a strangulated hernia, a possibility not considered in the differential diagnosis if the testicle is fully descended. Torsion of the fully descended organ is fairly common, but accounts in textbooks are misleading. Nausea and vomiting are rare; the pain comes on very suddenly if the patient is awake but is not excruciating; pyrexia is minimal. Even if untwisting whether manually or by operation has not been performed, the temperature is rarely above 100°F. I cannot agree with Romanis and Mitchiner (1937) that acute orchitis closely simulates torsion.

Bowen (1933) has reported 5 cases of what he calls acute idiopathic epididymo-orchitis, all of which I would have diagnosed as acute torsion, a diagnosis which he discards because the pain was not severe, there was no vomiting, and the testicle was not inverted as it must be in Bowen's view if the testicle can rotate on its axis. Sudden acute pain followed by a rapid increase in the size of the testicle (or of the hydatid of Morgagni or other vestigial organs) are, in my opinion, the two infallible criteria for a correct diagnosis.

In 1938, Lambert and I reported 9 cases of torsion, 4 occurring at Wellington, a school of 650 boys, in 1934–35, and 5 at Rugby, a school of 600 boys, in 1933–37. In 3 the torsion was of the hydatid of Morgagni. Since then I have seen 2 more examples of torsion of the testicle and 1 of the hydatid of Morgagni. All 3 were in patients with fully descended testicles, and I have never seen torsion in an undescended testicle.

Atrophy.—Undescended testicles certainly atrophy after puberty.

Vines studied the histology of 28 undescended testicles removed from patients past puberty, and found the greater the interval between removal and puberty the more advanced was the atrophy and fibrosis. In 12 specimens from patients aged 15–21, spermatogenesis was seen in one only. He states that "by the age of 16 well marked atrophic changes are often present." These changes were only seen in the post-pubertal phase and not in testicles removed before or at puberty. These findings are strictly in agreement with those of Wangensteen (1935), who carried out histological examinations of biopsied material obtained from testicles when they were fixed to the thigh and when they were freed several months later. The germinal epithelium often distinctly improved, but the normal adult state was never attained. However, in one instance, where the patient died accidentally 16 months after the thigh detachment, the histological picture was not unlike the normal. Isolated areas of mature spermatogenesis were present throughout. If this fact could be substantiated by observations on others it would prove that further development is possible after the testicle is released from the thigh and placed in its normal habitat, the scrotum. A follow-up over a period of years would show how many of those operated on were fertile. Grey Turner in his paper reported a man aged 31, the father of three children, who had had a double orchidopexy when aged 15.

Vines, Wangensteen and Mimpriss agree that atrophy does not take place until after puberty, and Mimpriss (1938) in his Hunterian lecture concluded that recovery of normal spermatogenesis was possible as late as 16–17 years. These facts are substantiated by a clinical study of testicles which have spontaneously descended (table III). All in whom bilateral descent occurred had normal testicles and in case 3 the testicle which descended spontaneously was equal to the one surgically transplanted in the scrotum. In many of the unilateral group the testicles immediately after descent were small, although most grew after descent and almost attained parity, and will no doubt function efficiently later. Several on descent compared favourably with their fellows. We are therefore on safe ground if we do not interfere until puberty, after which treatment must be carried out as soon as possible.

Malignant disease.—Neoplastic degeneration has always been a bogy to the surgeon as much as to the patient or his parents.

Pace and Cabot (1936) found 3 instances of adenocarcinoma among 24 undescended testicles, but none of these patients showed any clinical evidence of malignant disease, the diagnosis being based on the histology of the testicles examined, which in nearly all the 24 cases were removed "to facilitate the cure of a hernia"; 2 of the patients were aged 21 and 27, and the diagnosis was controversial in the third, who was 67. Vines (1935) did not observe any malignant change in 38 unilateral undescended testes, 28 of which were from patients aged 14–66, nor in 6 bilaterally undescended testicles. Coley (1919) stated that of 64 patients with undescended testicle 12 had sarcoma. MacKenzie (1934) stated that up to 1931 he had seen no instances of malignancy in 105 cases of undescended testicle, but later that he had seen 3 examples in retained testes, in men aged 30, 48 and age not stated. Eccles (1902), on the other hand, observed 854 cases of undescended testicle without finding one with a malignant tumour, although many had attacks of inflammation, in some instances oft repeated.

I suggest that the discrepancy between these figures depends on the age at which the testicle was removed. The older the patient the greater is the risk of the testicle becoming malignant. Transplantation into the scrotum does not necessarily remove this liability. Chevassu and Carillon (1938) recorded 5 cases of neoplasm in artificially descended testicles and Chauvin (1938) has reported others which are summarised in table IV.

Nearly all the neoplasms were seminomata. No surgeon has to my knowledge followed up his cases to see what proportion of those in whom operation was apparently successful have developed abnormalities in later life. Nevertheless, the 12 examples published by the French surgeons show that even early operation is no absolute guarantee against subsequent neoplastic degeneration Though the interval between descent and neoplasmic change was longest in those operated on before puberty, the average age of onset of the neoplasm was 26, compared with 31 in those who were operated on later Undue emphasis need not be laid on this comparison , but the advisability of any operation after puberty, except orchidectomy, is questionable

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[2] My conclusions about spontaneous descent are echoed by the observations of Armstrong (1918), late M.O. to Wellington College; Marshall (1937), M.O. to Taunton School; and Bjerre (1937), M.O. to a school in Denmark.

TABLE IV—INCIDENCE OF NEOPLASMS IN PATIENTS OPERATED ON *BEFORE AND AFTER PUBERTY*

BEFORE PUBERTY		AFTER PUBERTY	
Age at operation	Age when neoplasm appeared	Age at operation	Age when neoplasm appeared
8	30	15	15
8	36	20	25
11	20	20	35
13	20	26	26
13	23	26	42
		27	43
		32	33

The risks of torsion, trauma and inflammation, then, are not great, and probably no greater than in the fully descended testicle The risk of malignant degeneration seems a real one, but it may not be less if the testicle has been surgically lowered into the scrotum Atrophy is a real danger and no undescended testicle should be left untreated for more than a year after puberty

The patients do not suffer constitutionally from their deformity Except for those with general adiposity and with herniæ, they differ, on the average, in no way from their fellows Wessel (1938–39) considered 8–11 years was the ideal age for operation and deprecated postponing it until puberty because he noticed an access of athletic ability after operation This may have been wishful thinking, and I certainly have not noticed it Nor does the undescended testicle have any effect on the intelligence Several of my cases were scholars, some were superannuated, but in most the mental age was the same as the chronological

RÔLE OF SURGERY AND ENDOCRINOLOGY

Bigler and others (1938) summarised eighteen reports of the treatment of undescended testicles by hormones, and found that of 267 testicles treated 176, or 65%, descended completely The authors of some of these reports were probably prompted to publish them because of their high proportion of successes , others may refrain because of their low proportion Often details of treatment are missing, and it will be more helpful if only those results are considered where precise information is given Such a series is that of Spence and Scowen (1938), in all of whose cases adequate treatment was given (*at least* 500 *units twice a week, usually for* 6 months and in some instances for over a year) Table V is modified from Spence's

Spence and Scowen excluded from their series those they considered in the superficial inguinal position , I have excluded the retractile tests, for Spence and Scowen themselves admit that they would descend normally Most of their patients were young and success was minimal with patients over 17 Spence and Scowen have added greatly to our knowledge, but since their publication of 1935 they have become more sober in their claims for hormone therapy (1938) The conclusion is growing that those testicles which descend with hormone therapy are usually those that descend spontaneously Only half of the bilateral and a third of the unilateral undescended testicles were brought down by hormone therapy These results compare unfavourably with those where no therapy was given until puberty

Although operation should be postponed until puberty, delay after that is fatal to the testicle The difficulty is to persuade the patient's parent of this Only 3 of the parents of the boys who have passed puberty have consented to operation

In case 12, an atrophic testicle was removed over a year after the onset of puberty, when operation was first advised He received no endocrine therapy In the 2 others (cases 14 and 15), the testicles were both ectopic, having reascended anteriorly to the inguinal canal Both had received copious endocrine therapy, which had increased the size of the testicle, and at operation one was transposed through the scrotal septum and the other was brought down into the scrotum with satisfactory results In both, *the testicles have attained* parity with their fellows

Table III shows that the testicle is usually arrested at *the external inguinal ring* (7), *at the internal* inguinal ring (4), or at the neck of the scrotum (4) , in only 1 case was the testicle between the rings These clinical observations bear out the *surgeon's findings at operation*]

Spence (1938) reported some obstruction in 6 patients who were operated on after unsuccessful hormone therapy In all of these the testis had been palpable through the skin before operation In one the intercolumnar fascia stretched as a firm sheet completely across the external inguinal ring forming a barrier , in another the testis lay just inside the external ring and was firmly held by adhesions in the inguinal canal , in a third, the testis lay near the internal ring, where it was held by fibrous tissue Thompson and Heckel (1939) have also shown that anatomical peculiarities are common Of their 38 patients, 12 had bilateral and 26 unilateral undescended testicles Often the testicles descended spontaneously, *but* 11 *patients whose testicles did not descend* were treated surgically In all of these, fibrous bands prevented descent , in addition, the structures attached to the cord were often short, in 4 the peritoneal process was abnormally directed, and in one the external ring was absent

These recent observations confirm John Hunter's experience " The place where the ligament is most confined is the ring in the tendon of the external oblique muscle and accordingly I think one sees more men who have one testis or both lodged immediately within the tendon of that muscle than those who have one or both still included in the cavity of the abdomen "

TABLE V

Position of testicle	No of testes	Descent	%
Bilateral (66 testicles)			
Retractile	28	28	100
Inguinal canal movable but not in scrotum	23	13	56
In inguinal canal and not freely movable	3	0	0
In pubic region, movable but not in scrotum	1	1	100
Not palpable	11	4	36
Total, excluding retractile	38	18	47
Unilateral (32 testes)			
Retractile	5	5	100
In inguinal canal, movable but not into scrotum	18	7	39
In inguinal canal and not freely movable	3	1	33
In pubic region, movable but not into scrotum	2	1	50
In pubic region and movable into upper scrotum	1	0	0
In upper scrotum	1	0	0
Not palpable	2	0	0
Total, excluding retractile	27	9	33

The conclusion is inevitable that the testicle which *does not descend at* puberty is prevented from doing so by anatomical obstruction The surgeon's task, at first apparently a difficult one, is made easier by hormone therapy Under this treatment the testicle undoubtedly hypertrophies, as can be judged clinically, and coincident with this is an increase of the circulation, fragile spermatic blood-vessels becoming able to withstand the *strain of being* stretched when the testicle is inserted into the scrotum Usually one post-operative course of hormone therapy will cause the testicle to enlarge further and maintain its new position Puberty is the ideal age for operation, for at this time there is an access of gonadotropic substances in circulation

SUMMARY

Undescended testicles associated with clinical herniæ should be treated surgically , others should be given the chance to descend spontaneously at puberty If they fail to do so, operation should be per hout delay A preliminary course of hormone therapy will not often cause descent but will make operation easier Most of the testicles which do not descend spontaneously will be found to be ectopic or to have anatomical obstructions

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REDUCTION OF DUST-BORNE BACTERIA IN A WARD BY TREATING FLOOR AND BEDCLOTHES

BY

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IN a previous paper (van den Ende, Edward and Lush 1941) laboratory investigations on the dust-laying effect of liquid paraffin on textiles were described The experiment reported here was performed to determine whether the treatment of bedclothes by the method described would significantly reduce the number of dust-borne organisms in the air of hospital wards

The surgical ward in which the experiment was carried out (fig 1) consists of four subdivisions, a first and second female ward containing 12 and 11 beds respectively, and two male wards containing 16 beds each The distance between beds is approximately a yard Before the experiment was begun the floor, which is of pine planks, had been treated by occasional scrubbing and regular waxing with a standard floor polish , it is swept with a soft brush thrice daily The four divisions of the ward intercommunicate by ordinary doors

The windows of the ward are protected outside by brick anti-blast screens which reach to about two-thirds of their height Each window is provided with a series of horizontally hinged inside blackout screens which are raised and lowered at morning and night and whenever an air-raid alert is sounded A few windows were opened at irregular times during the experiment About a third of the patients in the ward were ambulant Each bed is provided with a mattress, three blankets, two sheets, a thick cotton counterpane, and pillows Before the beginning of the experiment, bedding was laundered in the hospital laundry in the usual way It received no special treatment

Two plate exposing machines were used which exposed one plate for 15 min in each hour, the plates being placed on a revolving table so that each exposure happens in the same place The machines were placed nearly in the centre of the two female wards, as indicated in fig 1 Each machine was surrounded by an openwork screen made of thick paper-board slats nailed on wooden uprights, measuring a yard square and a yard high The object of this was to prevent passers by from rubbing against the plates Each day's run was begun at 7 A M and ended after 10 P M The plates used were 5% horse blood Hedley Wright agar which had been dried in the incubator before use Colonies were counted after aerobic incubation at 37° C for 48 hours Possible hæmolytic streptococcus colonies were picked to blood agar, tested for soluble hæmolysin production, and sent to Dr Frederick Griffith, who kindly typed them

PRELIMINARY TESTS

Two 24-hour runs in the male wards showed that these were not suitable for the experiment, for the curves obtained were very irregular and apparently unrelated to the daily ward routine This was probably because the machines were placed in draughty places and possibly because a large number of the male patients were nearly convalescent soldiers of considerable activity and some mechanical curiosity

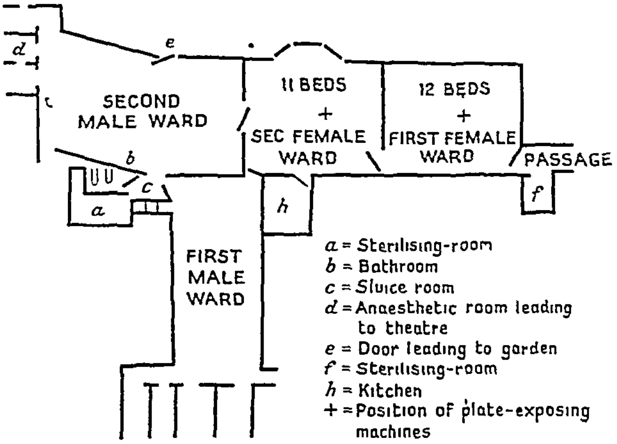

FIG 1—Sketch map of surgical ward

It was therefore decided to carry out the experiment in the second female ward (11 beds), using the first female ward as a control Accordingly, on Jan 16 and 17, before either the floors or the bedding had been treated, the machines were run The plate-counts for these two days in the second female ward are recorded in fig 2 , the curves for the first female ward were similar Nothing untoward happened to the ward routine, and it is probably fair to accept these two days as reliable samples One point of interest emerges from a study of the 8 colonies of hæmolytic streptococci obtained Their types were 1 colony each of types 13, 11 and 8 , 1 colony of a group-G streptococcus , 2 colonies of unidentified group-A streptococcus , and 2 colonies of type 4/24 This last type (4/24) had been introduced into the male wards on Jan 12, five days before, on 5 patients with burns of the face and hands, all of whom were heavily infected, and who by the 15th had developed heavy infections of their throats Since this type of streptococcus had not previously been encountered in the ward, and was not then or since found in the wounds or throats of any of the female patients, its presence in the dust of the female ward probably indicates that there is a fairly free interchange of dust between the different divisions of the ward Both of the colonies obtained on the 16th and 17th were on plates exposed in the second female ward, which communicates with both of the male wards by simple doors A colony of the same streptococcus was obtained from the air of the first female ward on Feb 6 The plate-counts for these first two days show definite maxima at the hours of bedmaking and floor-sweeping

TREATMENT OF FLOOR AND BEDDING

Floor—On Feb 4 the floor in the second female ward was scrubbed, and on the 5th it was oiled with spindle oil On the 6th the sampling machines were run in both female wards The counts for this run were little if at all below those of the preliminary run , and there was no significant difference between the first ward, which had not been oiled, and the second which had

Bedding—On the 6th, blankets, sheets, counterpanes and pillow-cases sufficient for the 11 beds in the second female ward were treated with 30% liquid paraffin in "white spirit" in the hospital laundry Fifteen gallons of the spirit-paraffin mixture was placed in a slate tank Each of the articles of bedding (all of which were clean) was soaked, wrung out by hand, and spun in a hydro-extractor The excess fluid which was spun out was recovered and returned to the tank The bedding was dried in a steam-heated drying machine

Sheets and pillow-cases were damped with water and then "ironed" on a steam calender, which had a steam-pressure in the roller of about 8 lb and in the "bed" of 75 lb

On Feb 9, the bedding in both female wards was changed The beds in the first ward (control) received ordinary clean bedding laundered in the normal way The paraffined bedding was placed on the beds in the second female ward The only comment following this from patients and nurses was that for 24 hours after the introduction of the treated bedding there was a pronounced (but not unpleasant) smell of white spirit in the ward at the times when the beds were made There was no complaint of discomfort, or "dampness" It is doubtful whether many of the patients realised that their bedding was abnormal To the casual eye, nose and touch it did not seem abnormal At the most, several of the nurses noticed a slight greasiness of their fingers after the morning's bedmaking During the succeeding days, some nurses commented on the scarcity of fluff and dust in the ward

Four days were allowed to pass, so that there might be some equalisation of dust The machines were then run for two days, on Feb 13 and 14 Unfortunately the motor of one machine burnt out, and since repair in time was impossible only one machine was available, so that curves were obtained only for the test ward (second female ward), the only control available is therefore the set of curves obtained on Jan 16 and 17 The counts for Feb 13 and 14 are shown in fig 3 They show a general reduction in air bacteria, and a flattening of the peaks corresponding to bedmaking and sweeping

DISCUSSION

The small numbers of streptococci recovered from the air during these experiments suggest that in these wards aerial transmission of streptococci, whether by dust or droplets, was probably not a significant factor in the cross-infection which occurred Furthermore, the small number of hæmolytic streptococci recovered made it impossible to use them as an index of the efficacy of the dust-laying methods under test It is hoped that there will be opportunities of testing these methods in scarlet-fever wards where the numbers of streptococci which can be recovered from the air are usually much higher

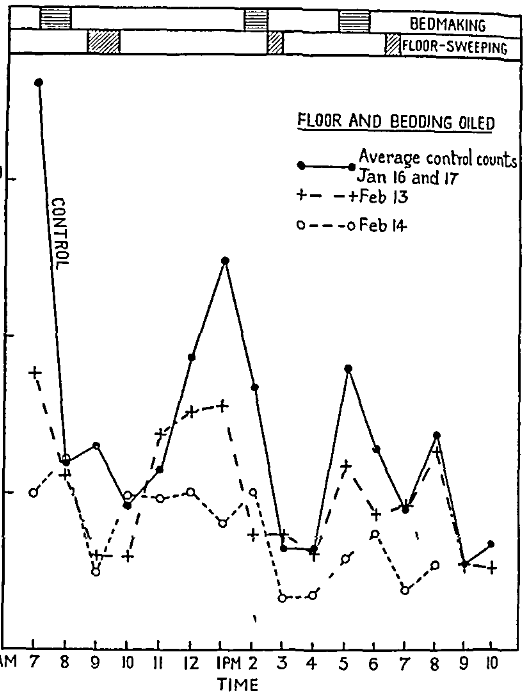

FIG 3—Plate counts in second female ward after oiling of floor and bedclothes

From the results of our experiments, which were based on the total numbers of dust-borne organisms, it can reasonably be concluded that the oiling of the floors alone did not significantly reduce the number of dust borne organisms in the air The treatment of both floor and bedclothes, on the other hand, resulted in a definite reduction in the number of bacteria which could be recovered throughout the day The favourable results of this investigation have been obtained in spite of the fact that interchange of dust occurs with the adjacent sections of the ward Evidence for this is the spread of the streptococcus type 4/24 from the male to the female sections Moreover, the lids of the machine used to expose the petri dishes collect a certain amount of dust, the deposition of which on subsequent plates was difficult to avoid If it had been possible to avoid these sources of error, and perhaps some other minor uncontrolled sources of dust, such as the blackout screens and window-ledges, the results both for floor-oiling and for the treated bedding would probably have been more striking It is evident that the wards in which the experiments were performed were not ideal for the purpose, chiefly because of the free interchange of dust between them Under the circumstances, the observed reduction of air bacteria shows that the method is worthy of a repeated and more extensive trial under more controlled conditions

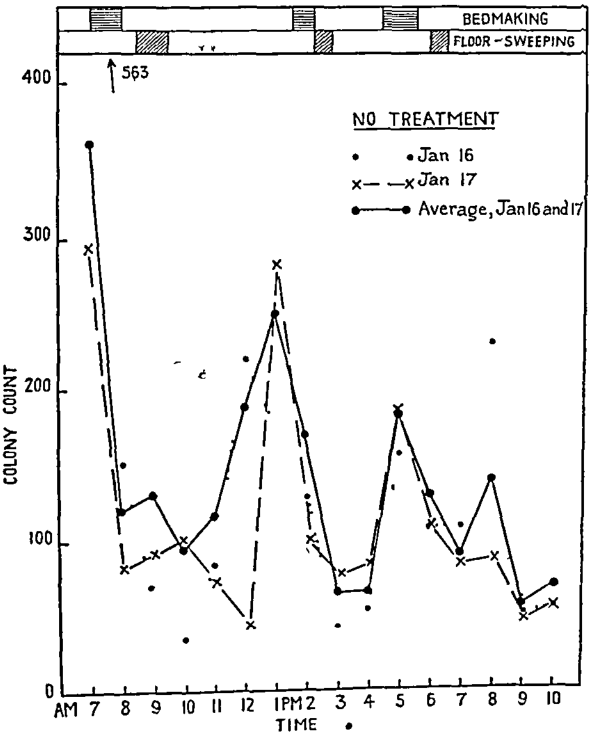

FIG. 2—Plate counts in second female ward before oiling of floors or bedding

It must be pointed out that the method of applying the oil from solution in white spirit is not at present practicable with the usual equipment available in hospital laundries In fact, these trials have made it more obvious that further research on suitable methods of application of liquid paraffin is necessary

SUMMARY

It has been shown that the treatment of bedclothes with liquid paraffin will reduce the number of dust-borne organisms in the air of a hospital ward

The great increase in the number of bacteria in the air which usually accompanies bed-making is almost completely eliminated

The treatment consists of the application of a 30% solution of liquid paraffin in white spirit

The amount of oil required to lay the dust is small and does not result in excessive greasiness

This experiment was made possible by the cooperation of the medical superintendent and the matron of the hospital, the laundress Miss E A Peacock, and the sister and nurses of the ward Our thanks are due to Mr R Mowlem for permission to carry out the experiment in his ward We are grateful also to Mr E Schuster, D Sc, for the loan of the plate-exposing machines which he designed

AN OUTBREAK OF POLIOMYELITIS

USE OF SULPHAPYRIDINE AND CONVALESCENT SERUM IN TREATMENT

BY

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IN the early part of the summer of 1940 there was a moderately severe epidemic of poliomyelitis in Harrogate, with a spread of the disease in gradually diminishing numbers to the surrounding urban and rural districts lying within about fifteen miles During the first four months of the epidemic, June–August, there were 75 cases in the borough and about 30 in the areas around The epidemic began gradually, only one or two cases developing in the first week The health of the community in general was good, there had been no serious epidemic of other infectious disease, and the weather had been congenial for several weeks before the outbreak began

CLINICAL FINDINGS

Symptoms —In more than half the cases seen by one of us (S M) the onset was insidious , commonly there was pain in the neck, across the shoulder girdle and down the spine, followed by a period of malaise, sore throat, slight temperature, stiffness of neck muscles, headache and extreme irritability lasting a week or more

During this period the posture assumed when the patient sat up in bed was often characteristic , there was difficulty in maintaining the head and trunk erect and almost invariably the patient rested the elbows on the bed to gain additional support Salivation, nausea and vomiting were common, together with some difficulty in phonation , nearly all the patients had a strawberry-like tongue The temperature varied , in several cases fever was slight and transient, whereas in others it reached 103° F A positive Kernig's sign was almost the rule

The presence or absence of tendon responses depended on the time when the examination was made, reflexes often being exaggerated in the very early stage and absent later Cases developing severe paralysis usually ran a high initial temperature for several days before the onset of paralysis

Age incidence —The first case in Harrogate was in an adult aged 26, but on analysis four-fifths of the 75 cases in the borough were in children under fifteen There were 2 cases in children under one year, 1 child being only three months old when attacked , there was only 1 case over thirty

Age (yr)	No of cases	Age (yr)	No of cases
Under 1	2	16–20	11
1– 5	14	21–30	3
6–10	24	Over 31	1
11–15	20		

Cerebrospinal fluid —During the epidemic we examined the cerebrospinal fluid in 55 cases in which the diagnosis of poliomyelitis was established As a rule the fluid was examined within a week of the onset In only 9 cases was there a rise in the protein content beyond 0 04 mg per 100 c cm , there was a corresponding rise in the globulin percentage The white-cell content varied widely in 16 of the fluids examined there were 4 or less white cells per c mm , the highest cell-count was 250 cells per c mm In the cases seen early almost all the cells found were lymphocytes, whether or not there was an increase in the cellular content , later polynuclear cells appeared, though never to the same extent as the lymphocytes

The initial white-cell counts were as follows —

Cell count per c mm	No of cases	Cell count per c mm	No of cases
0–4	16	51–100	4
5–10	12	101–200	3
11–50	15	Above 200	2

In 14 cases there was a white-cell count under 4 per c mm and a protein content of under 0 04 mg per 100 c cm In most of these the fluid was examined early in the attack and examinations made later showed in several an increase in either the cell-count or protein or both

Paralysis as a rule developed towards the end of the first week of illness, though in several cases it did not appear until the second week, and in one or two only in the third week In most of the cases in the earlier part of the series, when treatment was largely symptomatic, paralysis was progressive for a few days , in the series generally it was relatively more severe with each increasing age-group The severest residual paralysis in the series was in the oldest patient attacked, but in this case no specific treatment had been instituted until the paralysis was well advanced Our case-notes show that there may be a considerable degree of early initial paralysis without any residual paralysis if energetic measures are taken early

It is difficult to define with any degree of uniformity an exact standard for the severity of the residual paralysis, as many factors are involved in each case Cases may be classified into the following groups —

(*a*) No residual paralysis
(*b*) Negligible paralysis unlikely to impair wage earning capacity
(*c*) Paralysis likely to impair general efficiency but not render the patient wholly unfit to follow an occupation
(*d*) Paralysis producing complete incapacity

DIAGNOSIS AND TREATMENT

During an epidemic any illness in a child with pyrexia without obvious cause should be treated as poliomyelitis Occasionally the meningeal symptoms may be so severe as to suggest meningitis or meningism associated with a fulminating pneumonia or other acute disease in children In such cases examination of the cerebrospinal fluid usually helps, but it may give normal findings in the early stages of poliomyelitis (Bower and Meals 1939) and occasionally of cerebrospinal fever In tuberculous meningitis the examination is usually diagnostic Often the diagnosis must be based on little more than clinical impressions if it is to be made early Once paralysis has supervened the diagnosis is clear

Symptomatic treatment —Once the diagnosis is suspected the patient must be put at complete rest in bed A light stimulating diet is indicated , fluids should be given freely and should include an adequate supply of fruit juices rich in vitamin C Restlessness, when present, is as a rule well controlled by a mixture of bromide and chloral In the early stages bowel action should be regulated by enemata if necessary Care of the skin over pressure-points is particularly important, since bed-sores are liable to develop where there is paralysis or interference with skin nutrition During convalescence the diet should be generous and include concentrated vitamins and cod-liver oil

Care of paralysis —Whenever evidence of muscle weakness or paralysis is found, suitable support must be improvised Much can be done with sandbags, pillows, slings, and cradles , plaster splints should be applied early where required The criterion for splinting should be the inability of the weakened muscle or group of muscles to carry out a full range of movements Careful massage can be safely undertaken when the temperature has been normal for a week In many cases a combination of massage and ultraviolet light is beneficial

Sulphapyridine and convalescent serum —At the outbreak of the epidemic treatment was largely symptomatic, and close attention was paid to splinting and other means of support The earlier results were disquieting, some cases ended fatally, and in others the paralysis extended considerably in spite of treatment Later in the epidemic sulphapyridine was tried, at first alone and later in combination with convalescent poliomyelitis serum , the response seemed to show a definite advance, but in a disease like poliomyelitis when the variants are protean caution must be shown in interpreting results

Towards the end of the epidemic, we adopted the following modifications in sulphapyridine and serum therapy

1 Cases showing malaise or indefinite pyrexia without apparent cause were given sulphapyridine by mouth in appropriate doses and kept under close observation

2 Cases showing the earlier manifestations of the infection received in addition convalescent poliomyelitis serum

Initially 2 g of sulphapyridine by mouth and 20 c cm of convalescent serum intramuscularly were given, and 1 g of sulphapyridine was repeated four-hourly until the temperature settled unless there were serious contra indications Occasionally the serum was repeated once or twice

3 Cases presenting acute symptoms, where paralysis was impending or had already developed, were given initially 2 or 3 g of sulphapyridine soluble in physiological saline intravenously at the earliest moment possible together with 20 c cm of convalescent serum intramuscularly The sulphapyridine soluble was repeated four hourly until 8–10 g had been given A second dose of 20 c cm of the serum was given eight to ten hours after the first Next day sulphapyridine soluble and serum were repeated , in the more severe cases further injections were given on the third day, but usually they were not required Modification for children was made according to age

Since this procedure has been adopted we have had no serious extension of paralysis in any case, nor have there been any deaths , such reactions as occurred were negligible

ANALYSES OF CASES

We have been able to review the case-records of 48 cases These include cases admitted to the Harrogate General Hospital under the care of one of us (S M) as well as cases seen in private , others under the care of Dr L J Prosser in Harrogate General Hospital and Dr C H Greenwood in the Ripon Isolation Hospital, both of whom gave us an opportunity of collaborating in treatment , and a group of school-children under the care of Dr R G Mathews of Kirkby Lonsdale The cases fall fairly equally into three groups

(*a*) *Those treated symptomatically* with due attention to splinting and provision of suitable support (18 cases) In this group there was one death, and another patient developed such severe paralysis that she is incapable of following any occupation 4 of the others are so severely crippled that their general usefulness is likely to be seriously impaired In 6 others the paralysis is slight and not likely to lessen seriously their wage-earning capacity , the remaining 6 either escaped paralysis completely or developed only a negligible amount

(*b*) *Those receiving sulphapyridine* in addition to symptomatic and other treatment (14 cases) Amongst these one patient died on the third day of treatment, the patient having received an initial dose of 2 g of sulphapyridine and afterwards 1 g four-hourly for three days , though seriously ill when admitted to hospital there was no indication that the case would end fatally. In 3 others the paralysis extended considerably while under treatment, and these were left with a moderate degree of paralysis In the remaining 10 there was little or no paralysis (cf Wagner 1939, Rivers 1939 and Rhett 1940)

(*c*) *Those receiving both sulphapyridine and convalescent poliomyelitis serum* in addition to other treatment (16 cases) This group included many of the more seriously ill cases, some of them being so severe when first seen that little hope of survival was entertained In 3 of the group paralysis had already been present two or three days before treatment was begun, and it was unlikely that much benefit could be obtained , in these there was no further extension of paralysis In 2 other cases the paralysis was rapidly extending when first seen, and in one certainly no hope of survival was entertained, both of these made excellent recoveries with amazingly little residual paralysis The remaining 11 cases made an excellent recovery It was generally agreed that the pyrexial period was shortened and the toxicity lessened by the combined treatment Four cases were described in our previous communication (Miller and Wray 1940) and we append a further case-history from this group

Male, aged 5 years , seen on the evening of the fourth day of illness Child had returned home from school three days before with headache and had been unable to go to school on the following day , off food , restless Worse on the next day with slight fever followed by a very restless night, with repeated vomiting attacks On the morning of the fourth day the temperature was 99 6° F and the child very toxic, but no diagnostic signs were present Late in the afternoon he became worse, and in the evening the temperature was 102° F , he was stuporous and irritable, severe frontal headache was present, head retraction was obvious, and there was pain at back of neck He was unable to support head when asked to sit up in bed , there was moderate amount of paresis of right arm and left leg , superficial reflexes were present, the left knee jerk being very active , Kernig's sign positive in both legs Though only five years old the child was given 1 g sulphapyridine soluble intravenously in 20 c cm of saline with 15 c cm of convalescent poliomyelitis serum intramuscularly, followed by one sulphapyridine tablet (0 5 g) four hourly and fluids freely. On the following day the child was much better , temperature 99° F , both morning and evening Next day temperature became normal, and his condition was satisfactory , left knee jerk was now elicited only with great difficulty, the right being the same as when first examined There was no further extension of paralysis Further progress was uneventful, the child being left for a time with slight residual weakness of right arm and left leg When he was examined two months later it was almost impossible to detect any evidence of residual paralysis and the reflexes had returned

In none of the cases treated with sulphapyridine and serum has there been any serious constitutional upset A careful watch has been kept on the cytology of the blood and nothing untoward has been noted , there has been little gastric disturbance and the serum gave rise to no reactions

DISCUSSION

The underlying thesis in treating poliomyelitis with sulphapyridine and convalescent serum lies in the fact that the virus of poliomyelitis is probably an organism of feeble resistance This is suggested by (1) the relatively low fatality-rate , even the deaths which occur are largely due to the site involved, the anterior-horn cells controlling the muscles of respiration , and (2) the short duration of the acute generalised symptoms in those attacked From a study of the clinical aspect of the onset and early stages of the attack, coupled with the findings in the cerebrospinal fluid examinations, we have little doubt that initially the infection is systemic and later the anterior-horn cells are attacked because of the selective neurotropic affinity of the poliomyelitic virus for these cells On this basis the early clinical picture of the generalised toxæmia is easily explained

Since the disease is largely confined to children and adolescents, and since current literature indicates that the virus is widespread (Toomey 1937, Trask and Paul 1938) the majority of adults have probably acquired complete immunity to the disease

By the use of intravenous therapy a massive concentration of sulphapyridine soluble in the blood and body tissues can be readily attained and to this we attribute the rapid curtailment of infection and of the spread of paralysis The convalescent serum, we believe, has a dual purpose it enhances the action of the sulphapyridine in a way analogous to that in which specific pneumococcal serum acts in pneumonia , and in addition (from clinical observation) we have little doubt that the serum contains antibodies which help to neutralise the existing toxins and destroy the virus

In conclusion, we stress the necessity for early diagnosis In an epidemic many cases of the milder type will never be seen by the medical practitioner, but in those seen much can be done to avert paralysis if appropriate treatment is begun early

SUMMARY

An outbreak of poliomyelitis of moderate severity is reported, in which the incidence was predominantly among the young With sulphapyridine, either alone or combined with convalescent poliomyelitis serum, together with other appropriate treatment, the attack was rapidly controlled The importance of early diagnosis is stressed

We are indebted to Dr G P Wallace, house physician at the Harrogate General Hospital, and Mr S F Elcoate, senior laboratory assistant, for their assistance

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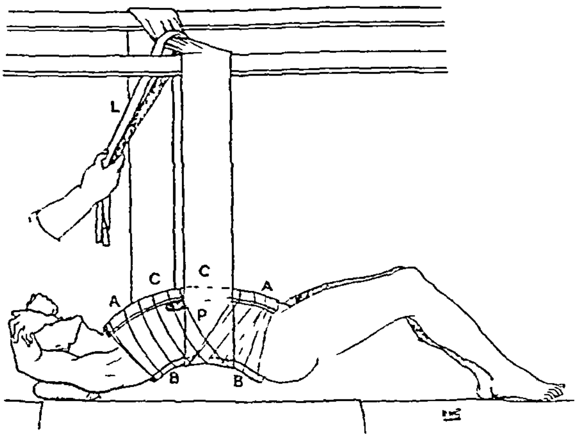
FIXATION OF FRACTURED VERTEBRÆ

By H H GREENWOOD, M B Lond and Leeds, F R C S
LATELY SURGEON TO THREE COUNTIES WAR HOSPITAL, ARLESEY

FRACTURES of the thoracic and lumbar vertebræ are, with rare exceptions, flexion fractures, and demand for their treatment fixation of the spinal column by a plaster-of paris jacket in hyperextension The two-table method, wherein the patient lies prone, with his elbows on the edge of one table, his thighs on a second table, and his body swung like a hammock between the two is admirable provided (1) the patient is fairly strong physically and able to cooperate intelligently, (2) the fractured spine is the sole lesion, uncomplicated by injury to the cord, or by some concomitant injury such as fracture of the skull or wounds elsewhere, and (3) the patient is sane In complicated injuries and insane patients some plan in which the patient lies supine, either supported by a frame or by a sling with block and pulley, is adopted There is a simpler method which needs only a double Balkan beam, a table, and three helpers The diagram illustrates the method

The anterior broad plaster slab, A X A, reaches from the suprasternal notch to the symphysis pubis (which it overlays), and the posterior slab, BB, reaches from the lower angle of the scapula in lumbar fractures, or slightly higher in thoracic fractures, to the upper end of the cleft of the nates—that is, over the sacrum These slabs are prepared dry The posterior slab is then wetted and applied, over this a broad (6–8 in wide) double domette bandage is carried as a sling over the horizontal bars of a double Balkan beam, the ends knotted firmly and over the knot a loop (L) is held by an assistant The body is then raised until buttocks and shoulders swing clear of the table The neck can be supported by a small pillow to prevent irksome extension of the head, and the feet rest on the end of the table The anterior slab is then wetted and applied with a stomach-pad (P) beneath it Two plasterers, one working from below and the other from above, then complete the casing as shown, until the limit imposed by the domette sling is reached By this time the anterior slab has set sufficiently to allow of the safe withdrawal of the stomach pad, the posterior slab is firm enough to retain its shape, and the sling can be cut across at CC, the lower ends now being incorporated in more turns of the plaster bandages until the gap is filled It is important that the back be supported when this is done and the body lowered gently to the table



This method is effective, needs neither apparatus nor the coöperation of the patient, and is specially suited to thoracic fractures The first case in which I used this method was an airman with a fracture of the lumbar spine and a fracture of the skull I have since found it eminently suitable for mental patients who sustain fractures of the spine during the convulsive treatment of schizophrenia, or from epileptic convulsions

Medical Societies

ROYAL SOCIETY OF MEDICINE

AT a meeting of the Section of Psychiatry on May 27, with Dr C P SYMONDS, the president, in the chair, a discussion on

Metabolic Changes in Periodic Catatonia

was opened by Dr A B STOKES Metabolic investigations in schizophrenia have, he said, been disappointing, perhaps because the material is far from homogeneous Gjessing selected a small field where the case material showed constancy in many dramatic qualities, and followed single cases through many months with daily biochemical and physiological investigations These cases, classified as periodic catatonia, are characterised by repeated attacks of stupor or excitement which come on and disappear rapidly, in the intervals the patient is "normal," though showing impairment of mental faculties with lack of volition and critical ability, poverty of ideation, emotional flattening and mannerisms Gjessing found a phasic variation in total nitrogen balance and in autonomic function corresponding with this periodic change Such cases are called synchronous syntonic to distinguish them from others in which the phasic nature of the mental disturbances and physiological functions is blurred, asynchronous and asyntonic There are two types in type A the excitement or stupor occurs during a period of nitrogen excretion, in type C it occurs during a period of nitrogen retention No intermediate type B has been discovered Gjessing maintained that the nitrogen phasic change is of primary importance He controlled his patients' environment and the conditions of his investigation most strictly, and he found that in type A the mental changes appear after the onset of nitrogen excretion, and in type C the abnormal mental state is associated with nitrogen retention despite increased general metabolism with a slight fall in body-weight The fæcal nitrogen remains fairly constant, so that there is no faulty absorption If a constant diet is given the attacks can be made regular The interval between attacks can be diminished by increasing the protein intake, and vice versa, thyroxine flattens out the phasic nitrogen swings and there are no periodic mental upsets The attacks can also be prevented by a low protein diet after depletion of the body's nitrogen store On these points Gjessing constructed a working hypothesis he suggested that at a time of change of phase in the nitrogen balance a toxic substance connected with disturbance of protein metabolism, is produced and acts in an inhibitive or instant way on the central nervous system producing stupor or excitement at the higher levels and autonomic effects like a sympatheticotonia at the lower levels Thus these patients are only functionally normal when the body's protein store is at a low level

Gjessing's points, said Dr Stokes, have been tested at West Park Hospital on two cases one a typical periodic catatonia-stupor, the other a patient with symptoms resembling but not strictly conforming with periodic catatonia, who served as a control Observations were carefully recorded with the aid of specially trained nurses Focal sepsis was eliminated, and all drugs prohibited, except three cigarettes a day A uniform fluid diet was given in precise quantities, the calorie allowance being constant throughout Vitamins were given in tablet form The fæces were marked weekly by charcoal biscuit and Kjeldahl nitrogen estimations carried out on all food, urine and stools in duplicate Rectal temperatures and two-minute pulse records were taken before meals and the stripped weight twice a week The mental state was charted daily The nitrogen figures were corrected for loss in sweat, hair and semen, for incomplete drainage from feeding and collecting vessels, and for the vitamin tablets Four experimental periods were devised in the first the diet consisted of fresh milk and eggs, in the second Antuitrin G was added, in the third the diet was a high-protein one based on dried milk, and in the fourth it was a low-protein one, also based on dried milk The nitrogen balance reflected the fluctuation of the body's total nitrogen store, the size of which was unknown During the first period the case of periodic catatonia showed a definite regular phasic swing in the nitrogen-balance curve, with peaks almost constantly every 40 days, the body-weight rose steadily and there was no appreciable loss of weight during the negative nitrogen phases. Temperature and pulse-rate rose with the negative balance, during which the stupors mainly appeared, but two stupors ended and a third began in a time of positive balance. The control case showed a consistent negative balance with a steady fall in weight, unaffected by a phase of great excitement. The temperature remained low, as did the pulse-rate, although it was uneven. This experiment therefore tended to confirm Gjessing's hypothesis that a swing in the nitrogen balance is primary. Antuitrin G was given to case 1 in a period of nitrogen excretion and a considerable protein anabolic effect was obtained over a hundred days, the idea being to reverse the effect obtained by Gjessing with thyroxine. The protein anabolism, however, occurred in both cases, after a considerable time-lag, and was perhaps due rather to the change in diet produced by summer milk, though that would not explain the periods of nitrogen retention in the control case. At any rate, the results failed to confirm Gjessing's hypothesis that increasing the protein shortened the quiescent interval and vice versa. The high protein diet caused a high positive balance in case 1. The stupor and pulse and temperature changes were divorced from nitrogen excretion. The ability of the body to store protein was good and when its rate was rapid the stupors continued regularly. This again conflicted with Gjessing's hypothesis. Return to the ordinary ward dietary had no effect on the stupors at all, although the weight dropped two stone. Intervention in protein feeding, therefore, did not affect the mental disorder in this case. The association of mental disturbance with negative nitrogen balance, Dr Stokes concludes, needs explanation; it does not seem to be directly causative.

Dr S. W. HARDWICK said that no specific disorder in the endocrine glands has been found in schizophrenia though there have been indications suggesting thyroid hypofunction. The empirical administration of thyroid has yielded favourable results, and the substance is usually well tolerated. Partial thyroidectomy has had success. Gjessing studied a small group in which the thyroid deficiency might be specific. In their "normal" phase the picture suggests hypothyroidism while during an attack it resembles hyperthyroidism, with raised basal metabolic rate, whether the disturbance is excitement or stupor. The electrocardiogram resembles that of myxœdema: a flat T1 wave in the normal phase of a type-A case and in the abnormal phase of a type-C case. The impedance angle, however, makes the relationship doubtful. Gjessing used thyroid to counteract a toxic substance produced during nitrogen storage and combined thyroxine with a low-protein diet. At West Park some female patients have been given thyroid extract with a low-protein diet, and clinical observations have been made. The first patient began stuporose, became excited while being given "step-ladder" thyroid doses and then relapsed on the cessation of thyroid treatment. Two other patients became "normal" from stupor. Their weight increased at the same time. Thyroid seems to fail after a relapse. In some cases thyroid seems to be of no benefit. The cases represented a highly selected group, to conform with Gjessing's types. The failure of thyroid treatment may be due to low tolerance, faulty timing, or to the fact that Gjessing's hypothesis is an over-simplification. Further work is needed. The indications for thyroid therapy are a definite rhythmic periodic catatonia, with corresponding variations in pulse, temperature and blood-pressure, and with a good tolerance to thyroid. Relapses to Cardiazol treatment may sometimes be averted by giving thyroid.

The PRESIDENT wondered if the observations could be made even more objective. The periodicity in these cases is very remarkable and is not wholly explained by Gjessing's interesting toxin theory.

Dr JOHN BRANDER thought that the most important problem is whence the periodicity? Manic-depressive phases may have a schizoid quality and justify a diagnosis of recurrent schizophrenia. The essential thing to find is the cause of the underlying physical phases. Is there a periodicity of nitrogen metabolism in normal people? And are our moods a result of it?

Dr T. RUSSELL FRASER said that periodicity and response to thyroid are the outstanding features of the type of case under discussion. In Addison's disease the attacks of acute adrenal failure can be influenced by thyroid. The gain in weight is, however, in contrast with the usual results of thyroid treatment.

Dr STOKES, in reply, mentioned that Gjessing had the assistance of a seismologist, who devised an instrument for precisely measuring the movements of a bed, thus making the observations of the patient highly objective.

Reviews of Books

Lectures on War Neuroses

By T. A. Ross, M.D. Edin., F.R.C.P. London: Edward Arnold and Co. Pp. 116. 6s.

IT is fortunate that Dr Ross was able to complete this admirable little book before his sudden death in March of this year. It contains the substance of four lectures delivered to postgraduates during 1940. His aim was to help battalion M.O.'s and general practitioners to deal with patients suffering from the effects of shock or strain in war-time. The ideas are therefore expressed simply. "Too much has been written," he says in the preface, "to frighten the general practitioner off these patients, many of whom can be cured or greatly relieved by the ordinary doctor." Dr Ross's technique is in the main the so-called method of persuasion, based on the writings of Dejerine and Dubois—a method, according to Diethelm, used almost exclusively by those general practitioners in America who try to treat the neuroses. In his preliminary chapter Ross describes normal and pathological fear reactions and their mechanisms. He believes that poor material could be excluded from the fighting forces if medical boards were allowed access to panel records. In doubtful cases a psychiatrist should be consulted. A battalion M.O. has a chance to help in maintaining morale and to prevent breakdowns, as evidence given to the shell shock commission after the last war showed. When acute neuroses develop in soldiers, Ross shows that their spread from person to person by suggestion can be prevented. Treatment of such cases consists at first in complete rest with or without continuous sleep; hysterical conversion symptoms are removed with ease, thanks to the highly suggestible state of these patients. He has also outlined the principles of treatment of the more chronic types of neurosis, but points out that some of these are likely to require expert supervision. The book, written in Dr Ross's characteristically easy and lively style, contains much of value to doctors, whether civilian or in the forces.

The Medical Aspects of Boxing

By E. JOKL, M.D., head of department of physical education, Witwatersrand Technical College, Johannesburg. Pretoria: J. L. Van Schaik. Pp. 251.

DR JOKL remarks that though, during the last few decades, physical training and sport have become important educational and recreational activities, "the medical profession has scarcely begun the study of the many 'specific' clinical problems which have arisen with this development." He describes the medical aspects of boxing, a very topical subject indeed both because of the wide interest it excites and its tendency to produce head injuries. He draws from his own experience, from the medical literature, and from fiction and newspapers. Unfortunately, his presentation of material is neither critical nor systematic. The reader learns innumerable more or less interesting facts, but he will often find it difficult to see which the author regards as important and well established. Several pages are given to one case of paralysis of the anterior serratus muscle, and the traumatic genesis of brain tumours has a chapter of its own; injuries to the eye, on the other hand, are not mentioned, and fundamental problems such as the physiology of concussion, disturbances of consciousness, and even "punchdrunkenness" are not exhaustively dealt with. The critical reader will not find it easy to form an opinion about the facts presented nor will he easily learn from the conclusion—which abounds in new quotations—what the author's attitude really is. There is only a footnote to guide him: there Dr Jokl suggests the immediate exclusion of boxing from the physical training programme of the armed forces. The book contains a good bibliography which will be useful to anybody who wants to study the subject systematically.

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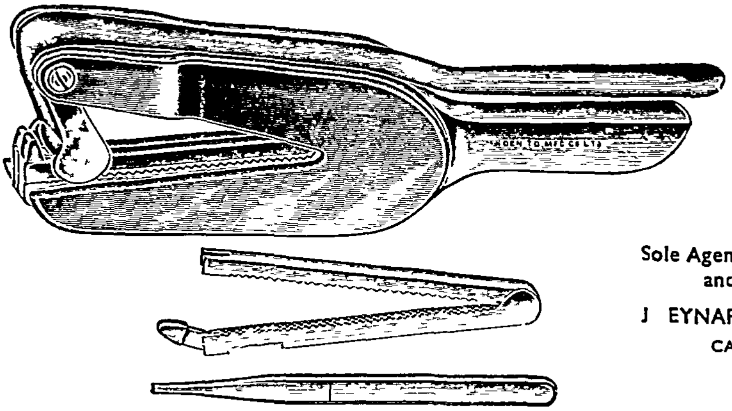

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THE LANCET

LONDON SATURDAY, JUNE 14, 1941

WAR AND INFECTIOUS DISEASE

History has justified David's choice of three days' pestilence rather than three months' defeat in battle as punishment for his pioneer work in vital statistics Had he chosen three months' war he would have had more than three days' pestilence Even in 1914–18, when more combatants were slain by enemy action than by disease, those camp-followers of armies, typhus and dysentery, did fearful execution upon the civilian populations of eastern Europe and continued to do so long after fighting ceased It may be doubted whether the volume of human misery in Europe has yet approached the full tide of 1916–20 Miss Clara E Councell of the United States Public Health Service, in an account[1] of war and infectious disease from ancient times has summarised the scanty data of the present war In Europe both enemy and enemy-occupied countries record large increases of cerebrospinal fever Germany had 1826 notifications in 1938 and 5046 in 1939 Hungary had an average of 52 from 1921 to 1928 and 395 in 1939 Yugoslavia had 731 cases in 1939 compared with an annual 85–155 in the previous twelve years Bulgaria had fewer than 50 annually from 1934 to 1936 and 669 in 1939 Typhus is said to be increasing but no precise data are available It is said that an outbreak of dysentery " comparable to that of the war of 1914–18 " occurred in the German Army during the Polish campaign Notifications of typhoid and paratyphoid showed no striking increase in 1939 except in Finland where they increased from 699 in 1938 to 1048 in 1939 Influenza was widespread in the winter of 1939–40 but not virulent It is unnecessary to summarise English experience We may conclude that, as in 1914–18, the regions of weakest sanitation (the eastern and south-eastern European states where ordinary standards of living are low and peace-time sanitary defences incomplete) have been the starting-points of epidemics, while the rest of the embattled area holds firm How long this will continue must be matter for conjecture When the standard of living, in terms of food, warmth and cleanliness, has fallen below the level accepted by, say, the Russian peasantry of peace time, great epidemics are inevitable But the experience of Germany in the last years of the 1914–18 war and the immediately succeeding years has shown that—given a habit of obedience and a tradition of hygienic order—great lowering of standards of living, military collapse and even civil disturbances do not inevitably breed pestilence Mortality from tuberculosis did increase greatly, but Germany was never ravaged by typhus or dysentery

A fundamental difference between this war and the last is, of course, the scale of aerial bombardment In the belligerent countries many urban populations have been dispersed and this process will presumably continue In our own experience the intermingling of " salted " and " unsalted " juvenile populations has proved less disastrous than had been expected It is as obvious on epidemiological as on military grounds that the resident population of industrial cities should be reduced to the minimum necessary to carry on essential duties, especially in those smaller towns where alternative public-utility services are not available The epidemiological effectiveness of dispersal naturally depends on the provision of adequate accommodation, catering and essential health services in the reception areas If these are to be satisfactory some measure of permanence must be secured It is futile to organise accommodation for, say, a thousand families dispersed over many square miles of suburban or semi-rural territory if that accommodation is not used or used capriciously Miss Councell quotes an estimate that by January, 1940, 87% of our evacuees had returned home , this may be an exaggeration but how great the drift back was we all know No doubt mistakes were made by both central and local authorities, but it remains fundamentally true that our national lack of discipline, epidemiologically speaking as well as in some other respects, makes for inefficiency in time of war Perhaps our national propaganda is at fault , perhaps there is too much tendency to suggest, or half suggest, that if people will but stick it out for a few weeks or months, this or that crisis will be passed Perhaps it would be wiser to speak plainly not of months but years The most hopeful way of guarding against epidemics is an orderly dispersal through a prepared territory , tumultuous flights from blitzed towns followed by tumultuous returns are the best preparations for epidemics No doubt this implies compulsion of a drastic severity, and some will call it a step towards Nazidom It means, really and not only rhetorically, thinking of industrial cities as in the battle line and essential factory workers as fighting soldiers In a war of years, the families of these soldiers are necessary to their fighting efficiency and for them the comfort of the unserviceable should be sacrificed Safety against bombing cannot be secured anywhere, but danger decreases rapidly as one passes from the centre to the periphery of a target area, and much could be done to organise life in the outer suburbs of industrial cities It might well be that, in the changed world which will arise when barbarism has been quelled, a redistribution effected on military and epidemiological grounds will be the beginning of a new and better social order Slums may disappear at last and Christopher Wren's dream of a new London may be realised

SULPHONAMIDE RASHES

In the calmer atmosphere now beginning to prevail over the topic of sulphonamide therapy there is opportunity to study side-effects which so far have received scant attention Cutaneous rashes are often, and conjunctival eruptions sometimes, seen , they are not usually serious but there is still plenty to learn about them In Great Britain the general experience has been that eruptions are rather commoner with sulphapyridine than with sulphanilamide, though workers in the United States report the converse Sulphathiazole causes cutaneous reactions more commonly than other sulphonamides Long, in America, and Melton here have noted that it may produce conjunctivitis, and also nodular lesions in the skin resembling erythema nodosum Volini and his colleagues[1] have now undertaken a critical survey of 7 sulphathiazole rashes which they have seen and of the cases reported by others. They agree that rashes and conjunctivitis in sulphathiazole therapy are common—in fact probably commoner than nausea and drug fever. Besides mimicking erythema nodosum the rashes may be urticarial, erythematous, morbilliform, maculopapular and purpuric; but the nodular lesion is the most common, probably being the advanced stage of a toxic eruption from long-continued medication. In their experience it has been associated with death from the primary disease in a high percentage of cases. Over here the nodular type of rash does not seem to have this grave significance, even in cases needing the high total dosage which VOLINI and his co-workers consider to be more relevant than the sulphathiazole concentration in the blood. Microscopically, the nodular lesions show hyperkeratosis with an almost complete absence of the keratohyaline layer of epithelial cells. Moderate intra-epithelial œdema is present in the granular layer with elongation of the nuclei perpendicular to the surface of the skin both there and in the stratum germinativum. The papillary layer of the dermis is œdematous and contains a fine fibrillary network; the reticular layer is unchanged. Other sulphonamide rashes are not peculiar to any particular compound. They are often morbilliform in character, but may be scarlatiniform, rubelliform, erysipeloid, urticarial, or even occasionally petechial or purpuric. They may be local or general; though usually mild, severe cases with extensive exfoliation have been reported. A sulphonamide rash is commonly accompanied by fever and general malaise, and the rise in temperature may precede its appearance, though some cases are apyrexial throughout. The blood picture shows no constant changes but there may be eosinophilia. The rash is most commonly seen at the end of about seven days' treatment, but the period is variable and rashes can appear even within a few hours of the beginning of therapy.

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[1] *Publ Hlth Rep Wash* March 21, 1941, p 547

[1] Volini, I F , Levitt, R O and O Neil, H B *J Amer med Ass* March 8, 1941, p 938

No single theory has so far explained the various forms of sulphonamide dermatitis but it seems that drug retention, sensitisation, liberation of toxins and the appearance of photosensitising agents can all play a part in different cases. In some patients there is a relationship between exposure to the sun and the development of skin rashes, and experience shows that sunlight treatment of any kind is contra-indicated during chemotherapy. Sulphonamide rashes arising through photosensitivity are often accompanied by an increased excretion of porphyrins in the urine and fæces, a condition also seen among subjects of acute microbic disease. REMINGTON and HEMMINGS [2] pointed out that the porphyrins associated with sulphanilamide medication, in the human subject and in rats, were coproporphyrin III and coproporphyrin I in the urine and the same two pigments in the fæces; in rats, the proportion of coproporphyrin I was greater. The series III pigments are less active as photosensitisers than their series I analogues, and thus the rarity of severe photosensitisation in patients exhibiting high-grade sulphanilamide porphyrinuria becomes explicable. But the proportion of series-I to series-III pigment formed may vary in different people and this may bear some relation to sulphanilamide idiosyncrasy, particularly dermatitis. The symptoms of acute porphyrinuria to some extent resemble those produced by toxic doses of sulphanilamide. Despite their findings these workers admit the possibility that a form of drug dermatitis may occasionally develop which is not a result of photosensitisation in the usually accepted sense. EIDINOW [3] conducted an investigation on 22 patients who were given various sulphonamides in daily dosages of 3 g. up to a total of 30 g., and submitted to different exposures of ultraviolet light without ill effects. The diseases from which they suffered do not seem to have been comparable to microbic infections, nor was the dosage of the same order, so that it might be unwise to accept outright EIDINOW's conclusion that sulphonamide medication does not increase photosensitivity.

The differential diagnosis of skin rashes due to sulphonamides is not as a rule difficult but they may be confused with the common exanthemata, especially in children with acute respiratory-tract infections, and it is noteworthy that drug rash and drug pyrexia may be accompanied by adenitis. When the rash is morbilliform, Koplik's spots should be sought; they may be present in measles even after the true rash has appeared. Mild skin eruptions generally fade, even while the drug is still being given, if a detergent is applied locally; but unless the illness is grave enough to make continued chemotherapy essential it is best to withdraw the drug and give plenty of fluids to hasten elimination. Nicotinic acid seems to cause many of these eruptions to subside, and has a specific action in the so-called pellagroid syndrome in which dermatitis begins as photosensitivity and is associated with porphyrinuria and stomatitis. Cutaneous manifestations of sulphonamide intolerance are rarely significant but their possible association with some graver form of toxic reaction—for example, in the hæmopoietic system—makes a blood examination necessary. Once a patient has developed a sulphonamide rash, treatment with sulphonamides in a subsequent illness should be undertaken with caution because he may have become sensitised; in such a case a positive reaction might be obtained with a patch or scratch test, or after a small dose administered by mouth.

RESPONSIBILITY IN A MUNICIPAL HOSPITAL

THE annual report of the London and Counties Medical Protection Society mentions the successful determination of a point of some interest to practitioners on the staff of a municipal hospital. A surgeon and anæsthetist took part in an operation for the removal of a child's tonsils. By an unfortunate accident the patient's cheek was burned and a scar was left. Damages having been claimed against the two practitioners, negotiations began with a view to a possible settlement of the claim. These broke down and a writ was issued. Six months, however, had elapsed between the date of the accident and the date of the writ. If the practitioners were within the Public Authorities Protection Act of 1893, then the action for negligence could not be instituted unless within the statutory six months' time-limit. This question of law was isolated for preliminary decision.

The statute of 1893 was passed to standardise various outstanding enactments which protected persons in respect of any act done in pursuance or execution or intended execution of any Act of Parliament or of any public duty or authority or in respect of any alleged neglect or default in the execution of any such Act duty or authority Here was a local authority with statutory and public powers and duties in respect of the provision and maintenance of its hospital If the defendant practitioners, being members of the hospital staff were executing the public duty or authority conferred upon the municipal council by law the action would not lie unless begun within six months of the accident If on the other hand the practitioners were acting as ' independent contractors ' and not as officers of a public body they would not have the protection of the statute The distinction can be illustrated by two cases in the text-books In Greenwell v Howell (1900) officials of a county council under instructions from their council drove along a disputed right of way in order to enable the question of the public right to be raised They were held to be within the protection of the Act In Salisbury v Gould (1904) a doctor in private practice gave the statutory notification to the local medical officer of health that a patient was suffering from smallpox He was held not to be performing a public duty It has long been recognised as law that servants or agents carrying out a public duty on behalf of a public body have the same right to protection as the public body itself but the particular circumstances of members of the staff of a municipal hospital do not seem to have been the subject of specific decision until the recent case under discussion

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[2] Rimington, C. and Hemmings, A. W. *Lancet*, 1938, 1, 770.

[3] Eidinow, A. *Brit. J. phys. Med.* 1939, 2, 150.

The judge held that the operating surgeon and the anæsthetist were exercising the public authority conferred on the municipal council and were entitled to the same protection as the council He dismissed the patient's claim with costs This satisfactory result is a typical instance of the good service which a defence society, well advised and alert to raise a point of principle where the facts justify it, can render not only to its members but also to the profession as a whole

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Annotations

PUNCH WITH CARE

In a book reviewed on another page Dr Jokl urges that boxing is so dangerous that it should immediately be eliminated from the training programme of the armed forces None of the cases of abdominal injury in his collection was in fact due to boxing Of the two cases of injury to the heart the serious one occurred in a man who took part in a fight in spite of a temperature of 101° F He quotes a writer who says kidney punches are often followed by hæmaturia, but he does not mention any personal observations A few cases of peripheral-nerve lesion and of facial weakness of more or less permanent nature are the only injuries to the peripheral nervous system found One case of hæmoptysis, one of pulmonary tuberculosis ' precipitated " by boxing and a few minor bony lesions exhaust the author s list of "peripheral ' injuries More serious is the list of 36 cases who died of intracranial hæmorrhage during or as an immediate consequence of fights Considering that this report covers the whole world literature, and that fatal cases hardly ever escape public attention, this number is probably not large as sport accidents go, particularly when compared with fatal accidents in motor cycling or racing There is, however, that specific problem of boxing punchdrunkenness "—the permanent damage due to repeated cerebral injury This problem is more complicated than one would think from reading Jokl's book There is no evidence to show, and some reason for disbelieving that punchdrunkenness can be produced by one or two knockout blows It is much more likely that continuous hammering too frequent fights fighting against heavier or otherwise superior opponents and continued fighting in a ' groggy ' state are responsible for traumatic encephalopathy There is also evidence that a considerable proportion of punchdrunk boxers are defectives to begin with[1] The incidence of punchdrunkenness varies with the social status of the boxer, amateurs are rarely affected, good professionals only after a long career if at all cheap professionals and paid sparring partners are most liable[2] The social and economic pressure on these poor ' chopping blocks ' which makes them go on fighting in spite of all warnings is the main cause of punchdrunkenness Occasionally amateurs driven by ambition or vanity, fail to stop while there is still time, Jokl may know of such cases, though he does not quote any But he will also know of students who sensibly change to another form of exercise before the headache after the first blow is over

Some like or dislike pugilism for moral and æsthetic reasons, these are not a medical concern But all who have medical charge of a body of young men in the Forces or elsewhere should know the special dangers of the sport More than initial or periodic percussion of the chest is required to judge fitness of a man for boxing repeated neuropsychiatric examinations must be made to find early warning symptoms and the medical officer should have authority to stop individual contests as well as to forbid a man to box This should make it possible to prevent permanent damage though not of course, all accidents The total exclusion of so popular a sport could only be advocated on incontrovertible medical evidence, and such evidence has not yet been put forward But it might be wise to forbid it to special categories of men, such as air pilots who need all the mental alertness and neuromuscular coördination they can get

BY, WITH OR FROM WOMEN

THE war services committee of the American Medical Women s Association had barely got into its stride when the armistice was signed, and the years after 1918 gave them a bigger chance than the war itself Their fine record shows how intelligently they rose to it Under the name of American Women s Hospitals they have helped to set up and maintain 73 hospitals and over 300 clinics in needy countries all over the world—in Albania, Armenia, China, Turkey, Greece and elsewhere They have also endowed beds—including one to the memory of Dr Elizabeth Blackwell at the Royal Free Hospital —and paid the salaries of women physicians to work among refugees of China Now Britain is at war again and the A W H is once more ready to help Last July their president, Dr Esther Lovejoy, offered the Medical Women's Federation a monthly contribution for the relief of civilians in our bombed areas Since then they have sent over £3000—a monthly average of over 10,000 dollars—and the executive committee of the federation give a good account of their stewardship in their *Quarterly Review*[3] They have sent help to many districts of London, to Belfast, Birmingham Bristol, Cardiff, Coventry, Glasgow, Hull, Liverpool, Manchester, Plymouth Portsmouth Sheffield Southampton, and Swansea, and they have clothed evacuated children at Cheltenham Medical work has had first claim on the fund, but patients who have lost everything when their homes were bombed have been helped One maternity hospital, for instance divided its share between its actual medical work and parcels of clothing for the mothers with an occasional gift of a cot or pram as a special "help-you-on your-way" present from the U S A Blankets were bought for a large hospital in the provinces which was reopening after receiving several direct hits A medical mobile unit staffed by a medical woman and trained nurses which works in East London has received a grant The personal belongings and medical equipment of district nurses who have been bombed out have been replaced In a hard-hit area medical women have been able to send away some of their patients for a short convalescence as the guests of the A W H Crippled children from an orphanage and the blinded have also been cared for American medical women are giving us practical help when we need it, and we know we can also rely on their sympathy and cooperation in the tasks of reconstruction that lie ahead

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[1] Jokl E and Guttmann E *Münch med Wschr* 1933 80 560

[2] Winterstein C E *Lancet* 1937 2 719

[3] April 1941, p 38

TREATMENT OF TETANUS

Vener and Bower report[1] a fatality of only 29% in a series of 100 cases of tetanus Excluding 12 patients who died within 24 hours of admission to hospital the net fatality of the remainder was only 19% These patients were all treated according to a set plan As soon after admission as possible a test for serum sensitivity was done and sedatives—chloral hydrate, gr 10–30, by mouth, or the same amount with an equal dose of calcium bromide per rectum—were given If necessary these doses were repeated and occasionally phenobarbital, gr 3–5, was injected intravenously in addition, but deep narcosis was avoided No further treatment was given for an hour, when the lesion was infiltrated with procaine hydrochloride and 20,000 units of tetanus antitoxin was injected round it, a further 60,000 units was injected intramuscularly, girdling the affected limb with a view of preventing the progress of toxin along nerve trunks An hour later the wound was excised thoroughly, or incised widely, the excision being kept within the area encircled by the antitoxin In some cases if a finger or toe was involved it was amputated Hot compresses of potassium permanganate were then applied to the wound Five hours after admission 20,000 units of antitoxin was injected cisternally by gravity After this the temperature often rose, sometimes to 106° F but usually subsided again in about ten hours, when it had fallen to 102° F 40,000 units was given intravenously by gravity in 300–500 c cm of normal saline, precautions against serum sensitivity being observed during this injection Two hours after the intravenous serum gr 15 of hexamine was given intravenously Vener and Bower suggest that this drug may produce an effect by increasing the permeability of the choroid plexus to antitoxin, by its antiseptic action, by altering the colloids of the nerve cells, or by some direct but unexplained action on tetanus toxin In most cases, an hour after the injection of hexamine a further 20,000 units of antitoxin was given intravenously in normal saline as before, and twelve hours later a final 40,000 units was given intramuscularly, in some cases the second intravenous dose was not given but the final intramuscular dose was increased to 60,000 units A second injection of hexamine was given twelve hours after the second intramuscular dose of antitoxin Subsequently four injections of 1500 units of antitoxin were given at intervals of four or five days to keep the patient desensitised *No patient in this series received more than 230,000 units* The features of this regime which may have led to the striking reduction in the fatality are the infiltration of the wound with antitoxin and the surgical technique employed, the intracisternal antitoxin, and the use of hexamine It is a pity that Vener and Bower do not give more clinical details of their cases, particularly in regard to length of the incubation period, the time after onset, and the duration of the reflex spasms, and it would have been as well to state whether any of the cases had previously received prophylactic antitoxin and whether the dosage is expressed in American or international units Tetanus is such a variable disease that the value of any new method of treatment cannot be assessed without full data

CANADIAN BLOOD-SERUM

EXPERIENCE in the present war[1] has proved the value of blood derivatives serum and plasma, in the treatment of traumatic shock Since no satisfactory evidence is available which demonstrates any difference in the efficiency of serum, whether dried or fluid and plasma it is probable that in the future their supply will be dictated by practical considerations Plasma has one great advantage it can be prepared from stored blood that is too old for longer storage In areas therefore where it is essential to maintain adequate blood banks, plasma will be the blood derivative of choice for at least a large part of the reserve stock On the other hand, plasma has proved on the whole less easy to handle in bulk than fluid serum Fluid serum does not clot and is not easily infected, plasma clots both on filtration, unless great care is taken, and on prolonged storage, it is also not so easy to keep sterile When donors are bled to make derivatives and not for purposes of blood storage, it is likely then that fluid serum will be prepared rather than plasma Dried serum is the ideal form in which to transport transfusion fluid, it can be kept at any temperature and is stored in small space Its preparation is a complex matter and, when transport and storage present no difficulties as in this country, it is clearly more economical to use the fluid form Earlier reports from the U S A, suggesting that serum gives rise to unpleasant reactions which are not found with plasma, have not been substantiated here by experience gained since the outbreak of war In this country all serum, whether fluid or in process of drying, is passed through Seitz filters, which is not the practice in the States This precaution may account for the difference in results The Canadian Government has been distributing blood serum for some time to Canadian forces in this country They have now generously offered to extend this service to air raid casualties here The serum is prepared from the blood of voluntary donors at Toronto University in a laboratory equipped and financed by the government The practical considerations we have set out make it clear why serum has been chosen rather than plasma and 500 bottles, each containing enough serum for one administration, are to be sent to the National Institute for Medical Research in London This increase in supplies will be welcomed by the transfusion service, on which ever-growing demands are being made

NEGLECTED OPPORTUNITY

> "Considerations of humanity, of national safety and true economy plead for some immediate effort to check rheumatic disease"—A Plan for National Action[2]

THE quotation is from the outline of a considered scheme put out by the Empire Rheumatism Council in which the high percentage of cure or relief achieved by the Royal National Hospital for Rheumatic Diseases at Bath receives honourable mention, and it is distressing to learn that not only is this hospital experiencing financial difficulties in common with other voluntary hospitals but that throughout the whole of last year it *was not being utilised to its full capacity* The hospital, which has recently celebrated its 200th year of service, treats as inpatients cases of rheumatism, gout, and the like, as well as patients requiring physiotherapy It has 156 beds Until August, 1939, its normal complement of beds was fully occupied and there was a long waiting-list The Ministry of Health then decided that in emergency the hospital would be used by them and expanded to 323 beds the extra bedding and equipment being supplied In September, 1939, on the outbreak of war, all rheumatic patients except 39 were sent home and 41 patients were received from other hospitals These patients gradually left and the hospital remained largely empty In December, 1939, the hospital was authorised to fill up to its usual complement and was released from liability for expansion under the E.M S scheme subject however to being taken over at a week s notice But it proved difficult to fill up again In the first place the regional officer of the Ministry of Health ruled that E M S rheumatic cases requiring treatment for longer than 14 days must be sent or transferred to the Royal Devonshire Hospital at Buxton Such a ruling deprived rheumatic cases in the south-western area of the adequate treatment available at Bath for obviously a period of 14 days is quite insufficient to deal with cases of rheumatism The embargo was not lifted until October, 1940, but this proved of small help since Bath is omitted from the list of centres established by the Ministry of Health for the treatment of arthritis and rheumatism Consequently many cases that could be transferred to Bath from E M S hospitals in the south south west and west for special rheumatic treatment or physiotherapy are required to go further afield Representations to the regional officer by the hospital authorities have had little effect (In practice, however a small number get transferred to Bath from local hospitals because a particular doctor is aware that his patient will be admitted, and retained) There must be numbers of cases with war injuries requiring inpatient treatment with physiotherapy, and more use could be made of the hospital in this direction In the second place the unawareness of the facilities available may largely account for the falling off in civilian cases With the present shifting conditions of medical practice doctors who previously sent their cases to the hospital are now elsewhere and those who have taken their place may not be aware of the facilities Whatever the explanation the fact is that during the first four months of 1941 the average of occupied beds was only 111, and there is no shadow of doubt that the empty beds imply suffering and disability left unrelieved

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[1] Vener, H I and Bower, A G *J Amer med Ass* April 12, 1941, p 1627

[1] Cf Vaughan, J and Brown, H *Proc R Soc Med* 1941, 34, 266, Whitby, L E H *Ibid*, p 208

[2] See *Lancet* April 5, 1941, p 407

SILAGE

A YEAR ago we were looking forward to a great increase in silage making provided rain fell at the appropriate time The hope—hardly ever unreasonable in England—was disappointed But though dry weather in the autumn limited the amount of surplus grass, enough was available in some districts to give practice and confidence in the use of the silo Failures have been few and some were due to attempts to ensile the wrong sort of material they have served to correct the impression that ensiling can turn rubbish into sound stock food Silage is of two different types, depending on the material from which it is made Protein rich silage, made from young leafy grass by the addition of molasses can replace imported cattle cake and is thus specially valuable just now Other types of silage made from arable land crops or from grass cut at a later stage of growth, can only be substitutes for hay They should not be despised however, weather permitting it is better to make hay of this older herbage but if the weather is bad the grass can be saved by ensilage Protein rich silage and hay are not competitive but complementary , they are made at different seasons and stages of growth of the grass and for winter feeding protein in the silage is necessary to balance carbohydrates in the hay Those who were dubious about making protein rich silage have been convinced of its feeding value during the winter Stock took to it readily and soon showed a preference for it Cows developed " bloom on their coats and colour in their milk which are normally found only in animals on summer grass We drew attention [1] to the importance of making this high quality silage last July and the need is now greater than it was then The Government aims to produce as much food as possible for direct human consumption and stock—other than dairy cows—must be considerably reduced Even the dairy farmer has to contribute his share of land to the ploughing-up campaign This means that he will have to make the best possible use of his decreased acreage of grass The growth of grass is fundamentally affected by the weather particularly by rainfall, but much can be done by skilful manuring and management to make two blades of grass grow where only one grew before Provided there is sufficient other nutriment in the soil nitrogenous fertilisers will hasten the growth and increase the grass yield with little or no detriment to the pasture Fortunately good supplies of such fertilisers are available Many farmers have planned ahead what sizes of silos will best suit their needs and have decided which fields are to be cut for hay and which for silage Others are waiting to cut odd corners and bits of surplus grass left by grazing stock Others are hoping for ample rain after their hay is cut and stacked so that the aftermath may be ensiled to give protein-rich material

Portable silos are available and skilled advisers in every district are anxious to help with any difficulties that may arise but the chief difficulty may be with the rain supply, for if that is uncoöperative again there will be no surplus grass

WOMEN WORKERS AND BROKEN TIME

WOMEN in industry consistently show a higher sick-rate than men Dr Margaret Dobbie-Bateman, who drew attention to this fact at a meeting of the Association of Industrial Medical Officers on May 17, added that the gynæcological sick-rate was not high, and that no special consideration was needed by women at the menses This has not been universal experience Miller has calculated [2] that in Canada 9000 working days are lost yearly by women owing to menstrual troubles Other speakers at the meeting agreed that dysmenorrhœa was a common source of short-period broken time Possibly varying popular standards account for difference in experience among factory medical officers There is a widespread belief among elderly and middle aged women that dysmenorrhœa is natural and inevitable a belief which finds no counterpart among younger women who have been accustomed to play games during menstruation and to expect no discomfort from a natural function The greatest time loss in industry from dysmenorrhœa is found among sedentary workers and physical exercises performed regularly, help to prevent it Dr Sybil Horner noted that a rest-room under the care of a simple minded untrained attendant appears to be an invitation to enjoy dysmenorrhœa for some hours with a cup of tea, at even fortnightly intervals She suggested that rest-rooms should rather be called " recovery rooms ' and that the time for which workers should be allowed to use them should be limited Dr R E Lane had prevented abuse of his rest-room by insisting that workers using it should clock out at the end of an hour, if they were not fit for work by that time A less arbitrary line can be drawn when the rest room is under the care of a doctor or nurse who can assess the patient's condition Pregnancy is not regarded as a bar to employment though Dr Alice Swanston advised against taking on pregnant women as beginners She noted a striking difference between the young muscular women who can do a man s job and keep it up all day and elderly matrons with flabby abdominal muscles and a tendency to palpitations

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[1] *Lancet*, 1940 2 74

[2] Miller N F *Canad med Ass J* 1940 42 349 and see *Lancet*, 1940, 2 492

These older women cannot stand as well as men and long hours predispose them to flat-feet, varicose veins and menorrhagia Shoes were criticised, factory workers, like nurses, are not always sensible in their choice it seems There appears to be a good case for providing a special type of protective shoe for women in industry and this might well eliminate the greater part of minor ailments of the feet as well as others due to faulty posture and fatigue

Hours of work for women are now being stabilised at two ten-hour shifts for 5½ days a week or three eight hour shifts for 6 days Last summer women were working an 84 hour week, Miss F I Taylor, deputy chief inspector of factories said (as she must so often have had to say) that long hours were a cause of absenteeism Women who are trying to run a home as well as respond to the demands of industry cannot work a seven day week, the needs of their family make it impossible Absenteeism may amount to as much as a third of the strength on Saturday mornings and many women take a day or a night off regularly each week to put their houses in order and do the week-end shopping Communal restaurants are needed, and needed badly, if this large body of workers is to go on serving the national need

IMPENDING DRUG LEGISLATION

THE bill to repeal the medicine stamp duties and at the same time to "maintain a fair balance between the interests of pharmacists and of other vendors" will aim at a limited measure of control over the sale of proprietary medicines, and also at removing from the Pharmacy and Poisons Act, 1933, the "flaw" by which the sale of drugs was unintentionally disallowed in the grocery departments of cooperative societies[1] Thus the prospects are that Mr Ernest Brown will introduce a sort of omnibus bill to correct errata in legislation enacted as far back as the eighteenth century and as recently as eight years ago, and to restrain the owners of proprietaries from doing something which none of the reputable ones are in the habit of doing—that is, from claiming that their specifics will cure diseases which are believed to be incurable by drugs alone It is now possible to define more precisely the terms of agreement which have been reached between the makers of proprietary articles and the distributors of them, and so to foreshadow provisions in the bill designed to compensate pharmacists for the loss of a privilege long enjoyed by them It seems that the interested parties have agreed that all shopkeepers should be at liberty to sell such medicines, but that non proprietary medicines, whether simple or compounded, shall be sold only by pharmacists if the labels on the packages name the complaints for which the drugs are intended If this became law, a grocer could sell Glauber's salts, or a mixture of rhubarb and soda, provided no indication was given to the purchaser about their medicinal properties, but it would be an offence for the grocer to sell Glauber's salts labelled "aperient" or rhubarb and soda labelled "for stomach ache" Apparently the grocers and other non-pharmaceutical retailers are not averse from the loss of rights implied by this arrangement, probably they expect to make up on the proprietary roundabouts what they will lose on the household-medicine swings The pharmacists, who as a body perhaps prefer to handle goods of known composition, appear to be satisfied with the compromise, and the manufacturers of proprietary medicines have no cause for discontent since the channels through which they will be able to distribute their products will be unlimited Yet it seems anomalous that a grocer should be allowed to sell recommended remedies of unknown composition and become liable to penalties by selling recommended remedies of declared composition The task of the Minister of Health in sponsoring this "non controversial" bill is not an enviable one

Clauses for the control of proprietary medicines will make it illegal to advertise medicines for the relief or cure of conditions such as blindness, cancer, consumption, Bright's disease, epilepsy, locomotor ataxy, lupus and paralysis, or to recommend drugs to procure the miscarriage of women or to promote sexual virility in man Thus reputable proprietary medicine owners stand to lose nothing

It is too much to ask, at present, that the whole question of the sale of medicines should be overhauled by Parliament, but it might be wise to limit the duration of new legislation, hurriedly enacted, to a date not far exceeding the conclusion of peace This is no time, as we have said before, for helping the sale of secret remedies

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ON a later page will be found the conclusion of a report of the summer session of the General Medica Council held at the Royal Institute of British Architects We are glad to learn that the architect who has made a preliminary survey of the council's house at 44, Hallam Street, damaged by enemy action, regards the structure as still sound If the necessary permissions and priority certificates can be obtained the council may be able to hold the November session under their own roof again

DR ISAAC FROST has been appointed medical secretary to the British Social Hygiene Council in succession to Sir Drummond Shiels, who will however continue to act as medical adviser to the council Dr Frost qualified from Bart's in 1921 and took his B Sc Lond with first class honours in physiology in 1926 He also holds the D P M He has taught biochemistry in Madras physiology in Birmingham, and has lately served in the L C C mental hospitals department He has made a special study of homesickness and immigrant psychoses and of epilepsy

SIR JAMES REID ROBERTS, C I E, who has died at Srinagar at the age of eighty was a distinguished member of the Indian Medical Service in its palmiest days He spent the whole of his service, after the completion of the necessary short period of military duty, in the political department, and rose steadily to reach the position of administrative medical officer for Central India Holding the highest surgical qualifications he did much to raise hospital standards in the central states During his time in India he was a welcome and genial member of medical congresses and before his retirement in 1919 he saw service with the army in Mesopotamia He will be missed by his many friends and admirers

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E M S FRACTURE DEPARTMENTS —The Minister of Health has lately reviewed the facilities available for the treatment of fractures in E M S hospitals He is anxious that all fractures cases should receive the treatment best suited to their needs under the care of experienced surgeons in well equipped hospitals and he has set out the adaptations he proposes to make in the existing arrangements in circular 2395 The special orthopædic centres which have already been set up will not be altered in any way but in addition three new classes of centres for the treatment of fractures will be established The first group will be those suitable from their situation for receiving cases requiring treatment for a considerable time The second group will be fracture departments suitable for the treatment of ambulant patients and those who do not require more than about a week's inpatient treatment The third group will be fracture clinics providing outpatient treatment by massage and remedial exercises for patients who have been discharged from hospital Where orthopædic centres and fracture departments are not available within reach of the patient's homes these special clinics will be needed Lists of the existing orthopædic centres and the two new groups of fracture departments are attached to the circular

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[1] See *Lancet* April 19 p 513 and Jan 25 p 130.

Special Articles

THE FUTURE OF GENERAL PRACTICE

By Dr Harry Roberts

Our medical services, like nearly everything else, have been dislocated by the immediate urgencies of the war All clouds are said to have silver linings, destruction affords opportunity for reconstruction How, in the light of past experience, can we, after the war, best rearrange our disordered medical services ? This question is being asked and tentatively answered in almost every issue of our medical journals as well as in the lay press and elsewhere I wish to confine myself to consideration of the position of the general practitioner—the only sort of doctor with whose work I am personally familiar I am not going to prophesy, to foretell what will happen, but rather to say what, in my opinion, is the future at which we should aim and for which we should hope

That general practice after the war will not be like pre war practice is certain Few of us would wish otherwise But there is no virtue in mere change, the fire is a poor exchange for the frying-pan Nor can any simple formula solve the matter Many doctors and many members of the public seem to think that all will be put right if we substitute for our present system, a system of state doctoring It is almost certain, and in my opinion to be hoped, that the state will play a much bigger and more general part in the provision and organisation of the medical services than it has done in the past, especially on the financial side But whether this is to represent an advance or a regression depends entirely on the sort of state doctoring we get In any case, we shall be wise to cut out all the stereotyped cliches and blessed words Capitalism, Socialism, Mesopotamia and all the rest of the mares' nests and red herrings that clutter up the road of medico-political reform

The basic problem of a truly democratic state in this matter of doctoring is to secure for every man, woman and child in the country, in proportion to their several needs and without regard to individual ability to pay for them, the benefits of all the medical skill and knowledge available Coupled with this problem is that of progressively increasing by the provision of educational and other facilities, the amount of medical skill and knowledge available

THOSE WHO MUST OPERATE THE SCHEME

Enthusiastic but uninformed social reformers are very t, in their zeal for mechanical tidiness, to take little count of the material they propose to reshape In the rrying out of any work of value, nearly always the most portant factors to be taken into account are the chnical abilities and goodwill of the men and women trusted with it The human reality, to quote Barbusse, the individual ' Every collective organisation of en must come back to the individual man, be quickened the individual life, and respect individual autonomy the fullest possible extent "

It is important to remember that, whatever formal rangements may be made, whatever may be the basis which medical services are organised, the community at any given time, dependent on the current ability d goodwill of the medical profession No matter how ell a health scheme may look on paper, or how potentily excellent are its results, those results will not aterialise unless there is a general and individual will nong the doctors that it should and shall succeed As agardelle said many years ago " The transformation the world does not depend on a simple change of overnment " To some extent this principle holds ood of every trade, craft and profession, but in the case the medical profession it is all-important, for medical rvices cannot be measured as bread is measured, either uantitatively or qualitatively A scheme that is rced down the throats of the people who have to carry out against their wishes and against their judgment rely succeeds

On the face of it, the problem of effectively organising nd distributing in the common interest the medical kill and medical knowledge available does not seem very difficult one The practice of medicine, however, is not merely mechanical, it is an art, and consequently depends for its success on the active cooperation of the artist Some branches of the healing art have so precise, so scientifically based a technique that competence and incompetence are easily gauged and the emotional factor need not worry the organising statesman Skilful surgeons, for example however organised and however paid, are likely in all circumstances—if they operate at all—to operate as well as they can So with many of the diagnostic and therapeutic techniques which occupy so large a place in modern hospital practice But it is different with the everyday professional intercourse between doctor and patient The intimacies of the consulting-room are not quite like anything else in the world The reciprocity of the relationship is in contrast with the impersonality of the confessional

There are two fundamental questions which call for answer Who is to pay the doctor ? Is the doctor's prime duty to his patient or to his employer ? Throughout medical history, his duty to his patient has been reckoned as absolute That is why, hitherto, those who could afford to employ a doctor of their own have preferred to do so rather than accept the ministration of a salaried official of the state

In private practice, the fees charged to the patient have customarily been more or less adapted to his economic status, but all too often the service rendered has been in proportion to the fee charged If we are to establish our claim to the title of democrats we should receive exactly the same fee in respect of our treatment of rich and poor, and that means that we must be paid by the state which has the power and the right for communal ends to take money from individuals in proportion to their surplus wealth In plain words, I believe that the only wise and fair method of paying general practitioners for their services is by capitation fee, uniform throughout the population Every man should be free to choose a doctor practising within his area and willing to accept him as a patient, and, if dissatisfied with him, to transfer his allegiance to another doctor at the end of any quarter Make everybody a panel patient, eh ? Yes, make everybody a panel patient I would have it an offence for any panel doctor to accept a private fee for medical work of any kind, but it should be open for any non-panel doctor to practise as a free lance—specialist or otherwise

At the moment, it is absurd to talk about money in terms of figures None of us has the least notion of what a pound really means, still less have we a notion of what it will mean when the war ends I will merely say, therefore, that I think that, with a universal panel service such as I suggest, the capitation fee should in proportion to other professional fees, be higher than it is at present I say this the more easily because I shall not be an interested party By no method other than that I have proposed do I see how we could retain anything like the traditional relation of doctor and patient during the period which is bound to intervene between the transfer from plutocracy and class society to the new democratic society for which so many of our fellows are prepared to sacrifice their lives

CHAOTIC GROWTH OF THE HEALTH SERVICES

If we agree that a general-practitioner service should be at the disposal of every man, woman and child in the country, and if it is further agreed that (through the general practitioner) hospital and specialist treatment should be made equally available when necessary how best could this liaison be established ? More than twenty years ago, thoroughly sound and practical schemes were provided by the Dawson Committee, and in the report prepared for the Scottish Board of Health by a consultative council of which Sir Donald MacAlister was chairman There was scarcely a breath of adverse criticism, but not an item of either scheme was acted on Our medical services—preventive and curative—have grown up anyhow, not as parts of an organic whole but with only casual inter-relation and consequently with great wastage of personnel The general practitioner or family doctor, the official administrator of preventive medicine the school doctor and the voluntary or provided hospital have no common currency no satisfactory instrument of intercommunication, and therefore small cooperative effectiveness

When most of the discrete services came into existence, medicine had far less to offer than it has today The competent general practitioner was in a position to apply pretty much all the diagnostic and therapeutic knowledge at the disposal of the healing art Major surgery and one or two specialties—such as ophthalmology—were outside his province, but for the rest varying individual intelligence and judgment alone distinguished one doctor from another Things are very different now, with the best will in the world, no single practitioner can cover the whole field of therapeutic technique, nor can the individual doctor provide for his patients the elaborate machinery needed for the adequate investigation of any but trivial ailments So far as the well-to-do are concerned the difficulty is more or less effectively met by a sort of hierarchic departmentalism, involving a series of expensive references to bacteriologists, radiologists, biochemists and other specialists This complicated procedure is obviously beyond the purchasing capacity of the poor Moreover—though it has not been so generally realised—it is beyond the means of the great majority of professional and other middle-class people The possibility of bringing the resources of modern medicine and surgery within the reach of the poor has been demonstrated by the voluntary hospitals of our great cities, and the new staff-salaried hospitals of the county and borough health authorities are rapidly following in their steps The hospital habit is growing in all classes, and it is difficult to imagine any really effective alternative method whereby specialist treatment—major surgery, electrotherapeutics, dentistry and the like—and modern diagnostic technique can be brought within the reach of the bulk of those who need them.

THE EDUCATIONAL BACKGROUND OF PRACTICE

Medical science and medical practice are not the same thing There is a time lag between them so that real progress may take place in the one without any coincident apparent change in the other Rare indeed is the faculty for applying newly acquired knowledge to the solution of old and familiar problems Moreover, intangible things figure so largely in the therapy of the successful physician that he is inclined to be almost indifferent to spectacular advances in the physical sciences even when they have obvious relevance to human physiology It was Samuel Butler who, half a century ago, said, " A physician's physiology has much the same relation to his power of healing as a cleric's divinity has to his power of influencing conduct " A century earlier Colton, another cynical realist, wrote " No men despise physic so much as physicians, because no men so thoroughly understand how little it can perform "

Is the new doctor no advance on the doctor of the last or of the penultimate generation ? Can he and does he do no more for a sick patient ? Well, the physiologists and the research scientists have, during the early part of this century and the years immediately preceding it, given us a lot of very handsome presents They have discovered and brought to our notice many vitally important things of which previously we had not the slightest knowledge the microscope did not reveal their existence, nor did the test-tubes and chemical balances give any hint of them Our knowledge of the endocrine glands, of the hormones, of the vitamins, is all new since I was a student, yet already it is impossible to take seriously a therapeutic technique which takes no account of the elaborate chemical control that plays so essential a part in harmonising our cellular and structural activities

There is, happily, increasing recognition of the part played by general, as distinguished from specific, causes of disease Germ hunting is not the medical sport of the moment Enthusiasts are giving far more attention to nutritional and other environmental conditions The doctor's job tends to make him somewhat contemptuous of generalisations, therefore, few practising physicians are found in the ranks of political extremists But today realistic evidence—some furnished by laboratory research, some by direct observation of the men, women and children with whom the individual doctor is brought into contact—is driving more and more intelligent members of the profession towards the socio-political left Almost any week one can find in the pages of the *Lancet* or the *British Medical Journal* statements of fact and sober expressions of opinion far more root-disturbing than anything more tendentiously expressed in the *Daily Worker*

It is not to curative medicine but to social hygiene and general economic advance that we mainly owe the fall in our national death-rate from 18 per 1000 at the beginning of the century to under 12 per 1000 in 1934, and the fall in our infantile death-rate to little more than a third of the figure at which it stood fifty years ago It is towards the raising of the general level of health—psychic as well as physical—rather than towards the securing of some slight extension of the length of individual life, that medical and hygienic enthusiasm is now being gradually diverted Recent physiological discoveries afford much scientific ground on which to build.

The average general practitioner of today is as knowledgable as were his ancestors, but it is as an instructor in the art of personal and domestic hygiene, as a skilled diagnostician, and as a trained all-round emergency man, that he could, in the twentieth century, most helpfully play a part in an organised medical service That is where a man's doctor ought to be useful, but he has not been trained to help in this way When he comes from his medical school, the young medico knows no more than the average layman about the art of healthy living He thinks in terms of suppuration, pneumonia, colitis, neoplasm, septicæmia, physical lesions, ulceration and so on What we want is a new kind of family doctor, one who knows all about these things I have mentioned, but knows also, and is more fundamentally concerned with, real personal health—the art of being whole, hale, alive The basic teaching of the medical student should aim at equipping him with such knowledge and with such a scientific attitude of mind as will enable him to recognise the *beginnings* of serious disease, mental as well as bodily It should make him competent to give adequate treatment to his patients suffering from ailments which do not call for specialist skill It should make him familiar with personal hygiene and preventive medicine, thus enabling him to be of real service to his patients, both in the preservation and in the recovery of health

THE REGIONAL PATTERN

Meantime, we can make a good start with the material and personnel we have, if we will but knock the organisation of the health services into shape The first steps towards the materialisation of a truly national medical service are so obvious and—compared with our present daily national expenditure—so collectively inexpensive, while at the same time so little disturbing to existing personal interests, that there seems no excuse for our not getting ready to take those steps directly the war is over How are we to set about it ? First of all, the country should be divided into regional units—not necessarily coinciding with existing counties or other administrative units—each with a regional council responsible for the provision and coordination of the hospital, specialist and domiciliary medical services within its area The local authorities within the area the voluntary and provided hospitals, and the general practitioners should all be represented on this council These regional councils should, while possessed of considerable local autonomy, be ultimately subordinate to the Ministry of Health They should be concerned solely with problems of health The organisations should centre round a large hospital, preferable a teaching hospital of the university type In all towns with populations of 10,000 or over there should be secondary hospitals staffed by salaried surgeons, physicians and specialists In the smaller towns there should be adequately but more simply equipped hospitals of the cottage-hospital type, staffed mostly or entirely by the local general practitioners Between the practitioners and these three grades of hospitals and the specialists connected therewith, there should be *full cooperation* Through the family doctor all the auxiliary health services—specialist service of all kinds as well as institutional amenities—should be mediated It is likely, as it is desirable, that the hospital will come *to be, in every area, the centre of local medical life* and local hygienic effort At present there is a great leakage of energy and skill through the lack of coordination between the hospitals and the outside practitioners on the one hand, and between both and the preventive health services on the other The public sanitary services—the medical officers of health and their subordinates—in this country have been, and are, generally satisfactory, but preventive medicine is now recognised as having scope and potentialities beyond those hitherto assigned to it It is becoming increasingly realised that most, even of the gravest, diseases have relatively minor and often remediable beginnings No serious steps are at present taken to recognise disease at this stage A careful periodic examination of each person, well or ill, would, if carried out by doctors adequately trained and equipped for the work, have great preventive value The greater part of ill health is associated with faulty environment or faulty habits of life It is therefore foolish extravagance to concentrate on the palliation of evils due to such causes the time, energy and knowledge that might have been devoted to their prevention The problem needs to be set out in due order—first things first

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MEDICINE AND THE LAW

Concerning Coroners

A PARLIAMENTARY question has revealed some doubt about the departmental control of coroners It seemed to suggest that, if there were complaint of the coroner for a county district, the power of the Lord Chancellor was ill defined and the power of the Home Office non-existent In reply the Attorney-General naturally referred to section 8 (1) of the Act of 1887 "The Lord Chancellor may, if he thinks fit, remove any coroner from his office for inability or misbehaviour in the discharge of his duty" The Attorney-General briefly outlined the Lord Chancellor's practice When the latter formed the opinion that a complaint (if substantiated) would be such as to require the coroner's removal, he would take the case up, giving the coroner a full opportunity to deal with any charge made, and he would decide judicially Under section 8 (2), of course, wilful neglect of duty is a statutory misdemeanour and one of the possible penalties is removal

The official answer seems to leave uncertain the part played by the Home Office Suppose the complaint were that the coroner was absenting himself from his district and leaving no deputy available to attend to the inquests for which his services may, in present circumstances, be all too often required It is ancient law that it is "inability" in a coroner to dwell in the extreme parts of the county so that he cannot conveniently exercise the duties of his office Individuals are entitled to make a complaint to the Lord Chancellor He may not care to act as investigator of a case whereon he may later have to adjudicate He would therefore presumably refer it for prima facie examination by the Home Office as the department ordinarily concerned with matters affecting coroners The recent parliamentary question seems to hint that the Home Office should not thereafter relapse into inactivity but should maintain a reasonably strict standard and should do more than it now does to bring the investigated complaint before the Lord Chancellor It is possible that the Home Office, preoccupied with security matters, is unable to give full attention to less urgent affairs The difficulty, if difficulty there be, can doubtless be remedied departmentally. The Attorney-General, at any rate, seems satisfied with the statutory position

Parliament is unlikely to entertain at the moment any legislative proposals of a controversial nature which have no direct relation to the war effort Further amendment of the law of coroners is therefore indefinitely postponed and the vexed question of medical versus legal qualifications remains where it was left by the Wright Committee in 1936 The committee, it will be recalled, had a strong legal element in its composition It recommended that in future only barristers or solicitors should be appointed to be coroners, and that, wherever possible, they should have had experience as deputy coroners and should have knowledge of forensic medicine The London County Council anticipated the proposed amendment of the law by deciding in 1937 that in future only barristers and solicitors should be eligible for metropolitan coronerships The recent appointment by the Middlesex county council of a coroner who is a doctor and not a barrister is therefore the more interesting Mr Ingleby Oddie, whose book was noticed lately (*Lancet*, May 10, p 606), provides a rare example of the coroner who has not merely possessed the dual qualification (in medicine and law) but has actually practised both professions The Wright committee seemed to place almost as low a value upon being thus doubly qualified as upon being qualified in medicine alone It may be admitted that, when a coroner stands upon the double qualification, one leg will usually be stronger than the other It is believed to be Mr Ingleby Oddie's conviction, based on long practical experience, that if the country wants the best coroners, they should be doctors Neither profession can make an impartial pronouncement on this issue

One intriguing suggestion has lately been made or revived The coroner's functions are closely related to those of the registration of deaths Modern health administration has given the medical officer of health an overwhelming interest in the information which is, or ought to be, available to the registrars of births and deaths and in the careful exercise of their duties Would it make for greater social efficiency if he took these duties over?

The Reconciliation of Medical Evidence

Some weeks ago we discussed a claim for personal injuries (*Lancet*, March 29, p 425) where the trial judge had criticised the calling of a medical witness after a preliminary order had been made for proceeding on agreed medical reports Overruling him on grounds there mentioned, the Court of Appeal vindicated the value of medical evidence given orally in court and subjected to cross-examination A solicitor has sent some courteous comments on our discussion of the issues It was suggested that the plaintiff might feel scant confidence in the course of justice if his own medical witnesses were told to harmonise their testimony with that of the defendant's medical witnesses Our correspondent less rhetorically observes that such an order would be as vain as to tell the plaintiff to settle with the defendant out of court It would transgress the principle that not only must justice be done but it must also manifestly appear to be done He recalls a case from his own experience where, without authority, the doctor of an injured plaintiff "agreed," or purported to agree, a medical report with the defendant's doctor The plaintiff's solicitor at once instructed a second doctor to examine, report and attend the court Expert witnesses, it is plain, must be careful how they fraternise across No Man's Land

Our correspondent adds his frank misgivings about the existing system as seen from the legal side Litigation arising out of personal injuries has, he thinks, become so much a matter of tactics and technique—in his own vernacular, such a "racket"—that reforms reaching beyond mere rules of procedure are now required "The highly specialised medical witnesses (the medico-legal experts referred to in Knocker's 'Accidents in their Medico-legal Aspects'), the policies of certain insurance companies, the sharp, sometimes unscrupulous, practices of lawyers and the highly complex state of the law (especially of workmen's compensation) are all in some measure responsible for the existing state of affairs" He does not think that the facilities for bringing in a medical referee to sit with the county-court judge as assessor in workmen's compensation cases (on the application of either employer or workman at a three-guinea fee) has substantially improved the determination of these disputes

Our account of the case under discussion, by the way, spoke too compendiously of the preliminary order "that the parties should agree the medical reports" As our correspondent points out, the full wording of the order in cases involving personal injuries is "that medical reports be agreed if possible, and, failing agreement, the medical evidence be limited to" a specified number of witnesses on each side The limitation of the number of expert witnesses is an obvious step towards expediting the business of the courts and neutralising the power of the purse enjoyed by rich litigants Some 15 years ago the late Lord Tomlin, then a Chancery judge, created a rule of practice which refused to admit more

When most of the discrete services came into existence, medicine had far less to offer than it has today. The competent general practitioner was in a position to apply pretty much all the diagnostic and therapeutic knowledge at the disposal of the healing art. Major surgery and one or two specialties—such as ophthalmology—were outside his province; but for the rest varying individual intelligence and judgment alone distinguished one doctor from another. Things are very different now; with the best will in the world, no single practitioner can cover the whole field of therapeutic technique; nor can the individual doctor provide for his patients the elaborate machinery needed for the adequate investigation of any but trivial ailments. So far as the well-to-do are concerned the difficulty is more or less effectively met by a sort of hierarchic departmentalism, involving a series of expensive references to bacteriologists, radiologists, biochemists and other specialists. This complicated procedure is obviously beyond the purchasing capacity of the poor. Moreover—though it has not been so generally realised—it is beyond the means of the great majority of professional and other middle-class people. The possibility of bringing the resources of modern medicine and surgery within the reach of the poor has been demonstrated by the voluntary hospitals of our great cities; and the new staff-salaried hospitals of the county and borough health authorities are rapidly following in their steps. The hospital habit is growing in all classes, and it is difficult to imagine any really effective alternative method whereby specialist treatment—major surgery, electrotherapeutics, dentistry and the like—and modern diagnostic technique can be brought within the reach of the bulk of those who need them.

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Medical science and medical practice are not the same thing. There is a time lag between them so that real progress may take place in the one without any coincident apparent change in the other. Rare indeed is the faculty for applying newly acquired knowledge to the solution of old and familiar problems. Moreover, intangible things figure so largely in the therapy of the successful physician that he is inclined to be almost indifferent to spectacular advances in the physical sciences even when they have obvious relevance to human physiology. It was Samuel Butler who, half a century ago, said, "A physician's physiology has much the same relation to his power of healing as a cleric's divinity has to his power of influencing conduct." A century earlier Colton, another cynical realist, wrote: "No men despise physic so much as physicians, because no men so thoroughly understand how little it can perform."

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There is, happily, increasing recognition of the part played by general, as distinguished from specific, causes of disease. Germ hunting is not the medical sport of the moment. Enthusiasts are giving far more attention to nutritional and other environmental conditions. The doctor's job tends to make him somewhat contemptuous of generalisations; therefore, few practising physicians are found in the ranks of political extremists. But today realistic evidence—some furnished by laboratory research, some by direct observation of the men, women and children with whom the individual doctor is brought into contact—is driving more and more intelligent members of the profession towards the socio-political left. Almost any week one can find in the pages of the *Lancet* or the *British Medical Journal* statements of fact and sober expressions of opinion far more root-disturbing than anything more tendentiously expressed in the *Daily Worker*.

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The average general practitioner of today is as knowledgable as were his ancestors; but it is as an instructor in the art of personal and domestic hygiene, as a skilled diagnostician, and as a trained all-round emergency man, that he could, in the twentieth century, most helpfully play a part in an organised medical service. That is where a man's doctor ought to be useful; but he has not been trained to help in this way. When he comes from his medical school, the young medico knows no more than the average layman about the art of healthy living. He thinks in terms of suppuration, pneumonia, colitis, neoplasm, septicæmia, physical lesions, ulceration and so on. What we want is a new kind of family doctor, one who knows all about these things I have mentioned, but knows also, and is more fundamentally concerned with, real personal health—the art of being whole, hale, alive. The basic teaching of the medical student should aim at equipping him with such knowledge and with such a scientific attitude of mind as will enable him to recognise the *beginnings* of serious disease; mental as well as bodily. It should make him competent to give adequate treatment to his patients suffering from ailments which do not call for specialist skill. It should make him familiar with personal hygiene and preventive medicine; thus enabling him to be of real service to his patients, both in the preservation and in the recovery of health.

THE REGIONAL PATTERN

Meantime, we can make a good start with the material and personnel we have, if we will but knock the organisation of the health services into shape. The first steps towards the materialisation of a truly national medical service are so obvious and—compared with our present daily national expenditure—so collectively inexpensive, while at the same time so little disturbing to existing personal interests, that there seems no excuse for our not getting ready to take those steps directly the war is over. How are we to set about it? First of all, the country should be divided into regional units—not necessarily coinciding with existing counties or other administrative units—each with a regional council responsible for the provision and coordination of the hospital, specialist and domiciliary medical services within its area. The local authorities within the area, the voluntary and provided hospitals, and the general practitioners should all be represented on this council. These regional councils should, while possessed of considerable local autonomy, be ultimately subordinate to the Ministry of Health. They should be concerned solely with problems of health. The organisations should centre round a large hospital, preferable a teaching hospital of the university type. In all towns with populations of 10,000 or over there should be secondary hospitals staffed by salaried surgeons, physicians and specialists. In the smaller towns there should be adequately but more simply equipped hospitals of the cottage-hospital type, staffed mostly or entirely by the local general practitioners. Between the practitioners and these three grades of hospitals and the specialists connected therewith, there should be full cooperation. Through the family doctor all the auxiliary health services—specialist service of all kinds as well as institutional amenities—should be mediated. It is likely, as it is desirable, that the hospital will come to be, in every area, the centre of local medical life and local hygienic effort. At present there is a great leakage of energy and skill through the lack of coordination between the hospitals and the outside practitioners council Dr Howard denied in evidence that he had committed adultery The council directed that his name be erased

An Educational Problem

The council heard an oral report from Col H L TIDY, chairman of the Education Committee, of a complaint which had been received through the Board of Education from a joint committee of teachers in secondary schools This committee stated that medical schools were limiting the number of students whom they would admit to the preclinical courses in anatomy and physiology on a higher school certificate, and were advising parents to send their children to a medical school directly after matriculation so that they would leave their secondary schools at 17 instead of continuing to the higher school certificate

The objections the joint committee raised seemed, Colonel Tidy observed, to rest on different and inconsistent grounds It first said that the proposal of the medical schools would, if carried out, have a harmful effect on sixth-form science work , then it criticised the recommendation of the medical schools that the boys should continue their general education between matriculation and entry to medical school (in accordance with a recommendation of the G M C), saying that to do so would be a waste of time that medical students ought to come to their medical studies as quickly as possible, and that to continue general education after matriculation affected their chances as candidates for State scholarships The committee was therefore at the same time asking for assistance to prevent the medical schools from encouraging boys to enter immediately after matriculation, and complaining at the proposal that they should continue their general education It overlooked that if a boy stayed at school to take the higher certificate he must occupy two years in chemistry, physics and biology , whereas at a medical school he could get through those subjects in a year It was in fact, asking to have it both ways The G M C decided not to intervene

The Pharmacopœia

DR DAVID CAMPBELL, chairman of the Pharmacopœia Committee said that sales of the B P 1932 had reached nearly 50,000 The third Addendum had become official at the beginning of this year , amendments had been made in it to conform with emergency action taken to conserve stocks of certain materials A fourth Addendum, now in proof, would include amendments already made official, certain new monographs prepared for the next B P , amendments relating to glycerin, and an appendix describing revised sterilisation procedures The Pharmacopœia Commission, working in collaboration with the war emergency formulary committee of the Ministry of Health and the therapeutic requirements committee of the Medical Research Council, had prepared a further list of approved non-proprietary names for certain substances now being manufactured in Great Britain, and hoped that these names would be generally adopted These names would be used in the B P for such substances as were later included

CONGO DOCTOR —Having spent what he regards as the most interesting ten years of his life as a missionary doctor in the Belgian Congo, Dr W E Davis, an American, has written a lively and entertaining book about his experiences there ("Congo Doctor" Robert Hale Pp 286 *12s 6d*) Despite competition from witch-doctors he seems to have kept his end up pretty well, touring the country and injecting sufferers from yaws with neosalvarsan, training his own hospital teams of native boys and performing numerous feats of major surgery under primitive conditions at two dollars a time Not every English or American surgeon would care to operate in a crazily built hut during a tropical storm and in almost total darkness when it may be necessary to lean over the laparotomised patient in order to keep the rain out of the peritoneal cavity Dr Davis modestly attributes his low operative mortality to the toughness of his patients, who if they can survive infancy can survive almost anything , but there must be more to it than that He reproaches himself for idleness, but there is little evidence of it in this book, which describes a variety of extra-professional activities, including an elephant hunt, and is illustrated with some excellent photographs

In England Now

A Running Commentary by Peripatetic Correspondents

IT was said that the late Lord Salisbury once described a certain daily as a paper published by office boys for office boys and further referred—which I beg leave to doubt—to the scientific weekly, which I will disguise as *Phusis*, as a journal edited by madmen for madmen I wonder what the noble lord would have called a trade journal which has just come into my hands ? Cecil Rhodes said that university dons are children in finance but any don who got hold of this journal I am talking about, assuming he could read it, might be excused for dubbing business men as children in their illusions Just as children see their toy engines as stream-line locomotives, business men see the business which they have created or inherited as the chief pillar of the economic system I remember strolling one day from the bacteriology department of a big works into the manager's lavatory to find nearly all the important members of the tablet-pressing department grinding up tablets of aspirin made by rival firms to see how they "took up" in water compared with the firm's own tablet It was clear that things weren't going well The firm's tablet refused to take up "Dash it all" said the managing director, "our tablet must be the best *We* make it" I don't know how it all ended , I left the firm shortly afterwards But the memory has explained for me some of the more lurid advertisements I have read or the shortcomings of commodities I have too trustingly bought on trade descriptions It is an optimist who believes the pictures on the seed packets This train of thought was started by an article in this trade journal about the child's dilemma at the sweetshop, which seems to be "A penny ain't much good today Might as well put it in the Spitfire collection" The writer suggests that the Government, which recently subsidised railways, public utilities and foods might "subsidise sweets for kiddies" Nor is this all There is a full-blown article on the importance of cheap sweets from a nutritional viewpoint by two scientific blokes—one of them an "old friend of mine"—with more letters after their names than Goering has medals on his chest (or is it bosom ?) And this article—all decked up in lovely terms such as disaccharides, carbohydrates, vitamins, reducing sugars and proteins—is out to show that "children have a craving for sugar, the intensity of which increases if this real want is not catered for" So a craving indicates a real want, does it ? Ha ! A little lower down, "Young children not only require a sufficiency of these various nutrients, but appear to have a special need for sugar, as opposed to starch" The real want has become a special need and there are further steps in the development of a craving into a necessity All I can say is, this is most unfair to me For forty years now whenever I have had a ticklish report to write I get a craving for sweets and cigarettes, and in the palmy days of peace I used to sit with a tin of sweets on one side of me and a box of cigarettes on the other When my tongue got so plasmolysed with the sugar that it hurt I gave it a rest and started in on the cigarettes When my pharynx was thoroughly kippered I went back to sweets And so *da capo al fino* I haven't been able to buy a boiled sweet or a cigarette for months and my temper and output have suffered Do you think that I could get the appropriate journals to publish articles pressing on the Government the urgent need of providing cheap sweets and cigarettes for peripatetic correspondents ? Well why not ? I've known the Ministry of Food do strange things in my time But I'm afraid they will regard my craving for sweets and that of my juvenile fellow sufferers with a cold and unsympathetic eye

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There is a good deal of human interest to be found in examining recruits at medical boards Seated in no 4 booth one afternoon I asked a young man, "Are you well ?" "Yes," he replied politely, how's yourself ?" I realised then the wisdom of the chairman's invariable gambit which invites no such rejoinder And his 'You're very well, my man, aren t you ?" can be counted on to strengthen weak hearts white livers and trembling knees , it needs a brave or desperate neurotic than two expert witnesses unless there were special reasons to the contrary His brethren on the Chancery bench adopted the rule but, as the House of Lords indicated in the British Celanese *v* Courtaulds litigation, the calling of irrelevant expert evidence can still be an abuse Medical witnesses are more frequently seen in the King's Bench division and the county courts than on the Chancery side, and there has occasionally been a tendency to invite a jury to decide according to the numerical preponderance of doctors on one side or the other But jury cases grow fewer and fewer , it is the judge who now usually has to decide the facts as well as the law Both the High Court and the Court of Appeal have statutory power to call in the aid of " one or more assessors specially qualified " , but neither this nor any other method has yet done much to supersede the prolonged wrangle over disputed facts to which professional witnesses must make their contribution

UNITED STATES OF AMERICA

CONTAMINATED SULPHATHIAZOLE TABLETS

FOR three months there have been widely distributed a number of tablets of sulphathiazole which in manufacture were accidentally contaminated with phenobarbital The company responsible has known about the mistake since Dec 20 However, the U S Food and Drug Administration did not learn what was happening until March 20 and then learned not from the company but from the Health Department of Boston The American Medical Association became aware of the accident through a report received on March 26 Both of these national organisations took prompt measures to discover the three lots of contaminated tablets and to warn physicians against their use but all tablets have not yet been found The amount of phenobarbital in each tablet is not constant A few patients are known to have slept from 36 to 48 hours One patient, on the other hand, took four tablets, one every 3 hours, and merely felt drowsy

VOLUNTARY HEALTH INSURANCE

It was on Feb 5 that the supreme court found the American Medical Association and the Medical Society of the District of Columbia guilty of conspiring to restrain " trade " of the Group Health Association of Washington, D C[1] A few days before Group Health Cooperative, Inc , of New York City, held its formal opening The subscription rate is $24 a year or $18 when a group is admitted There are about 250 physicians whose services are available under the plan The medical advisory board under the chairmanship of Dr Kingsley Roberts reads like a medical Who's Who of New York City and includes the professors of medicine both of Cornell and Columbia medical schools

AMERICAN EUGENICS SOCIETY

This society held its spring conference and fifteenth annual meeting in New York City on March 31 In the morning the subject for discussion was recent advances in knowledge of human heredity Dr E J Humphreys, director of research at Letchworth Village, and editor of the *American Journal of Mental Deficiency*, reviewed the literature, and Dr William Allan, founder of the Family Record Office of Charlotte, North Carolina, stated the arguments for studying human hereditary disease Since so little is known about the inheritance of disease, the best place to begin such a study is, he thinks, with those diseases that wreck childhood, such as blindness, deafness, crippling and defects of the central nervous system Women are prepared to accept the discipline of contraception rather than face the risk of giving birth to such defective children Public-health departments should make themselves responsible for the collection of family records through which the mechanism of heredity can be studied and by which advice can be given to prospective parents

In the afternoon discussion centred around the need for a population policy Mr Frederick Osborn described the task of eugenics as being the reduction in the number of defective persons and an increase in the proportion of people born capable of being leaders Mr David V Glass, research secretary of the Population Investigation Committee of Great Britain, denounced the population policy of Germany and Italy as being " merely part of an imperialist and expansionist policy " In 1927 Mussolini had said " to count for something in the world Italy must have a population of at least sixty millions by 1950 " He commended the population policy of Sweden Mr Frank Lorimer, professor of population studies at American University, welcomed the cessation of population growth in the United States but regarded with misgiving the trend toward a rapid fall in population To assure the future of the nation conditions must be created that will lead educated parents in the broad middle classes of America to have families of 4, 5 or 6 children A world order without war must be built, for war is a double jeopardy—it destroys lives and prevents births Economic depressions must be controlled by planning since the automatic controls assumed in classical theory no longer guarantee stability It must be made possible for young parents to start a family without disastrous results to their standards of living

GENERAL MEDICAL COUNCIL

SUMMER SESSION, MAY 27–28, 1941

(Concluded from p 733)

As a result of reports from the Dental Board the registrar was directed to erase from the Dentists Register the names of James Harold Hill and John Harold Smith and to restore the name of Albert Stanworth

Charges against Medical Practitioners

The council then considered a number of charges arising from drunkenness, either in civilian or in Army life Four of these had origin in general courts martial which had ordered dismissal from the Service In no case, however, was the name erased from the register

The council directed the erasure of the name of Horatio Matthews, registered as of 30 Harley Street, London, W 1, M D Glasg , 1910, who had been summoned in May, 1940, on charges of advertising an ophthalmic service At that hearing (*Lancet*, 1940, 1, 1057) the charges had been found proved, but judgment had been postponed until this session Dr Matthews did not attend and was not represented, and the matter was discussed in camera

The council also directed the erasure of the name of Arthur John Ireland registered as of Stone Hurst, Tunstall, Staffs, M C P & S Ont , 1920, who had been convicted at the Chester Assizes of giving false information concerning a birth and of making a false statement in a notice required to be made by a public general Act of Parliament This was the " Lady Haldon baby case " Dr Ireland attended, accompanied by Mr George Bankes, counsel, who pleaded on respondent's behalf that he had been deceived by his wife and had got nothing out of his false certificate He was now in the R A M C

James Leslie Hill, registered as of 36, Chepstow Road, Newport, Mon , M B Edin , 1917, had been summoned to appear before the council as the result of a divorce action which had proved him guilty of adultery with a married woman, Gwenda Margaret Watson, with whom he had stood in professional relationship at all material times Dr Hill said in evidence that the professional relationship had not begun until a year after the adulterous relationship Mr Oswald Hempson, solicitor, who represented him, submitted that for a registered medical practitioner to attend his mistress was not infamous conduct Having considered all the facts, however, the council directed the erasure of Dr Hill's name

Richard Christopher Howard, registered as of 104, Harley Street, London, W 1 M R C S Eng , 1924, had been summoned to appear on a similar charge The complainant, Mr Hart-Davis, was accompanied by Mr L D Woolfe solicitor, who said that in the divorce proceedings, after the petitioner had given evidence that the doctor had on several occasions stayed at the petitioner's house during his absence and occupied the bedroom next to that of the wife, and had stayed with her at a Yorkshire hotel, the doctor had not further contested the case His solicitors had admitted on his behalf the matters with which he was charged before the

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[1] See *Lancet* May 24 1941, p 675

Letters to the Editor

RESEARCH IN THE E M S

SIR,—The suggestion in your leading article that voluntary workers could be used in emergency hospitals to help in research has been amply confirmed by our experience At the beginning of the war it was obvious that if all notes from our neurological unit were sent to the Ministry of Pensions uncopied much valuable research material would be wasted Application was therefore made to the local Red Cross, V A D , and W V S organisations, and they provided us, over a period of eighteen months, with about a dozen typists doing voluntary part-time work Some of these, of course, have been transient In all, the working hours they contributed amounted approximately to the services of one and a half full-time workers a week *They were placed under* the supervision of the only full-time secretary provided for the neurological unit As a result, at the end of the eighteen months, we have the complete records of some 2500 patients typed and filed A typed copy has also been sent to the Ministry of Pensions , the doctor himself is allowed to keep his original notes for his private use

Sutton, Surrey LOUIS MINSKI

CONGENITAL PYLORIC STENOSIS

SIR,—I am in complete agreement with Dr Burnet when he says that a tumour is always present in pyloric stenosis My paper dealt with that disease It was concerned with the response obtained with Eumydrin in relation to hospital treatment, and its chief aim was to discover any way, other than trial and error, whereby it could be predicted how a given infant with pyloric stenosis would respond Otherwise I would have made it clear that a tumour, so called, was palpated in every case in the report, not by one, but by two or more, observers In every case, that is, but one This child failed to respond to medical treatment and was successfully operated on It seems I should have made this clear

That pyloric stenosis can be cured by medical treatment was established before any satisfactory operation was devised, and of course long before eumydrin was used To maintain otherwise is to suggest that the disease has for years been almost unknown in (say) Stockholm and Copenhagen, where on the other hand spasm is frequent , or that infants with " true " stenosis frequently present themselves at one children's hospital in (say) London, whilst at another a proportionate number come with pylorospasm, and that stenosis seldom occurs

Atropine does, as Dr Burnet suggests, indeed diminish spasm of the pylorus , and the hypertrophic condition of the muscle resolves Rammstedt's operation also relieves the spasm It does not, I am sure Dr Burnet will agree, cure the hypertrophy, which as he says " may extend to the stomach and even the œsophagus " , yet the hypertrophy also resolves, and very quickly

Whether the spasm should be relieved by medical or surgical interference is a matter of opinion, and often of judgment, and I have not found it one that can be determined by palpating the abdomen

Harley Street W 1 R H DOBBS

SIR,—Recent articles by Helen Mackay and R H Dobbs on the treatment of congenital pyloric stenosis with Eumydrin raise two extremely important points for discussion—namely, the incidence of gastro-enteritis in children's hospitals, and the relative merits of eumydrin and operation in the treatment of the hypertrophied pylorus It has been established that the death-rate among infants treated in hospital in this country with eumydrin is from 11 to 13%, but where eumydrin fails and operation follows the death-rate rises *to* a figure between 33 and 75% The chief cause of death is given as gastro-enteritis Where operation has been chosen as the method of treatment the death-rate varies from 0% in cases treated *privately* to as much as 25% in those treated in hospital

In a series of 70 cases treated surgically during the past nine years at the Paddington Green Children's Hospital and the Willesden General Hospital by four surgeons including one of us (F W M P) there were 10 deaths, a mortality of 14%, and of these 6 were deaths from gastro-enteritis The other causes of death were convulsions (2), bronchitis (1), and inanition (1) No surgical catastrophes such as hæmorrhage or peritonitis occurred All the infants were operated upon under open ether anæsthesia

We do not expect that all infants suffering from this condition will survive but we think that the death-rate could be kept at a very low level provided that (1) we can reduce the incidence of gastro-enteritis and (2) an unhurried preoperative preparation of about 48 hours is followed by a careful surgical technique Cooperation between physician and surgeon has with us always been most intimate and is considered essential There is no mystery in the Rammstedt operation nor is any exceptional skill required Any good general surgeon should be able to obtain successful results as long as a few simple technical points are studied and followed

The incidence of infective gastro-enteritis is a disgrace to our children's hospitals and the risk must be abolished Possible ways and means are

(1) Medical treatment at home

(2) Discharge from hospital of operation cases as early as possible

(3) Provision of separate rooms or cubicles with strict nursing precautions such as the use of masks and careful aseptic technique The ideal of course is to have special day and night nurses

During 1938 two glass enclosed cubicles were constructed for us at the Willesden General Hospital in the children's ward Since then in 11 cases only one death has occurred This is an encouraging sign and we believe with further experience we shall be able further to reduce the death-rate to 5% or less

What is the future outlook in the two methods ? After operation a healthy normal infancy and childhood is expected and follows Can we be told of the late results of eumydrin treatment ? Are these children more liable to gastric upsets and attacks of vomiting ? Our own small experience of eumydrin has been disappointing and no case has as yet been made out for its enthusiastic adoption

We do not believe such a condition as pylorospasm exists It is a refuge diagnosis

PEARSE WILLIAMS
Wimpole Street, W 1 F. W. M PRATT

" SHOCK "

SIR,—In his interesting paper on civilian psychiatric air-raid casualties (*Lancet*, May 31, p 686) Dr Felix Brown says, " The symptoms in mild cases of shock are tremor, sometimes violent, dilated pupils, and tachycardia, with an emotional state of fear " These symptoms are however the classic indications of fear, and in a later sentence Dr Brown speaks of them as a " fear reaction " The treatment he prescribes (detailed history, reassurance sedatives) is the treatment for frightened people I suggest that it is undesirable to allow the word " shock " to become a medical diagnosis The term " shock," without qualification, means an event not a condition , although when qualified by an adjective it may indicate a condition, as in " surgical shock " But " shock " or " nervous shock " as a diagnosis of a medical state possesses no medical precision and does not describe any condition for which other terminology is not available and more appropriate " Bomb-shock " is another diagnosis which is now being freely used by medical practitioners All these terms —which are being employed for a variety of mental states—are descendants of that unhappy family which included railway spine, traumatic neurasthenia and shell-shock, now largely deprived of their respectability The cases described by Dr Brown as " acute, emotional shock " are simply instances of excessive fear reaction, and they are occurring in some numbers If the plain English is thought to be too cruel a description for them I have elsewhere suggested the word " hyperphobosis " (υπέρφοβος, terrified) as one which indicates the group of symptoms but, unlike the other terms makes no implication as to their ætiology It is an interesting thought that in former wars soldiers displaying this to disappoint him The occupations of the recruits in an industrial district provide a catalogue of the myriad processes of modern industry An odd and unexpected job is that of "caller-up" He is the engine-driver's alarm-clock His whole occupation is to cycle from house-to-house waking engine-drivers and he must not leave until his quarry shows himself at door or window A trichologist proved more puzzling until I noticed his look of professional pity for my sparsely covered scalp "Hairdresser," I asked? "Hair-specialist," he replied I remembered when, as a boy, I was trying to make conversation with the youth who was cutting my hair, and commenting on the emptiness of the shop said I thought barbers were always busy on Saturdays "Barbers may be," he had told me, haughtily, "but hairdressers are not" From barber to hairdresser to trichologist, from clerk to stenographer to secretary, from undertaker to funeral-furnisher to mortician It is natural that one should wish to magnify the dignity of one's labour but too often the importance of the work varies inversely with the sonority of its title

* * *

The private doctor tries to do what is best for his patient as a citizen he has a further duty to the community If he becomes a state doctor he may find increasingly that the interests of his patient and of the community are not identical, for to the state the herd is more important than the individual I sit in my garden and watch the silver balloons studding the blue sky They denote for me a fractional increase in security over that my colleagues, equally virtuous and more distinguished, enjoy in a neighbouring city Yet the balloons continue to protect my unworthy head because I live near a target which the Air Ministry judges to be of high value to the community Take a clinical example If I want to immunise a private patient against diphtheria I inject him with 0 2 c cm of alum-precipitated toxoid and some weeks later inject another 0 5 c cm Then, if my patient and I wish to be certain of his absolute immunity I determine, in three months time, that he is Schick-negative If, however, I work for the state I give 0 1 c cm, followed by 0 3 c cm and need not worry about the Schick test The herd is primarily interested in protecting itself and if there is a certain percentage of Schick-negative individuals in the community diphtheria epidemics are baulked just as refractory muscle-fibres inhibit those waves of contraction that riot around the auricle So a handful of Schick-positive reactors after immunisation makes no matter Sometimes, of course, the interests of the community are identical with those of the individual (the Schick-negative person after state immunisation), often they embrace his interests in coincidental fashion (myself and the balloons), sometimes they are in partial conflict with the individual's good (the Schick-positive person after state immunisation), often, as in war, the community demands the extinction of the individual as the price of its own survival—i e, absolute conflict Medicine, like religion and art, places a high value on the individual It may be difficult in a state medical service, but it should not be impossible, to reconcile these conflicting loyalties

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The disparity in the ratio of doctor to civilian-patients and doctor to service-patients arouses much comment The difference between the 1 to 2500 and the 1 to 250 is too considerable to escape attention There are reasons for the greater service needs which are self-evident, the Forces must provide for all possible emergency requirements, must allow of personal medical supervision and daily contact with a small group of men, and must spare a good margin of time for matters of organisation and routine (these forms in duplicate, in triplicate, in quadruplicate and even occasionally in quintiplicate) One interesting consideration arises how many persons can one doctor be expected to look after in any sort of medical service—in health and in sickness in prevention and cure children and adults? My guess is 1500, and he should be expected to maintain a decent standard of clinical practice Plans for 3000 patients to each doctor seem likely to debase our present performance rather than enhance it

* * *

"They can't take this from us" It is thirteen years since I first heard this phrase and it was spoken by an old woman She was seated on a kitchen-chair outside her back-door and in the shadow of her house The day was Whit Monday and the sunshine was brilliant, the back yard was squalid but her gaze rested on the beauty of an apple tree in full bloom "They can't take this from us" As I drove away I wondered who were "they" She was the widow of a patten-maker who had worked in the foundry at the bottom of the road A foundry which had in the '80's made for its owner a fortune, a knighthood and a country estate When work was plentiful, wages were good but in bad times even the skilled workmen, the old hands, were stood off There were no retaining fees, no pensions, no sick pay and no workmen's compensation It was the heyday of *laissez faire* In good times and bad these thrifty, decent folk brought up their families, they were of necessity thrifty and decent since for those who were not there remained only the Poor Law At any time sickness and unemployment and death, dread trinity of terror, might come upon them and they had no reserves "They" then, were the forces of insecurity Since there is little evil which has not its counterpart of good, their pleasures were simple and satisfying Human relationships, religion, fruit-trees in blossom, a day's fishing, a few books—the things that could not easily be taken from them The upper and middle classes in England, the millions of large and lesser Forsytes, had, for the most part, not known this vital insecurity for a hundred years Not until 1940 France had fallen The invasion was expected, property, stocks and shares, position, the family—all were threatened I heard my phrase again but on the lips of a different social class A distinguished psychiatrist sat in my garden, looking beyond the apple trees, and said "A dispassionate observer would say the position was hopeless", and then settling down more easily in his deck-chair, and bringing the apple trees into focus, he added, "But even the Nazis can't take this moment from us"

* * *

"How can my countrymen ever be civilised or even efficient," asked the Italian returning from America, "while they will call each other 'illustrissimo ingegnere' or 'eccellentissimo dottore'?" We in England congratulate ourselves on having escaped this extravagance as we have avoided the pompous rigmarole of Geheim sanitatsrat or Frau Professor Doktor In fact we have gone to the other extreme of modesty where all parade of professional idiosyncrasies is excluded from social life The lawyer leaves off his wig when he comes from court and the doctor hides his impedimenta in a bag that is no longer a tell-tale black But while we keep styles and titles to a minimum in our talk, we spread them unrationed across envelopes The harmless Dr or Mr of polite conversation is transformed into the meaningless vestigial appendage Esq No one utters this mystic word It carries no recognition of services rendered or qualifications achieved The dictionary defines it as "an aspirant to knighthood" But write it we must every time we address a letter The initials of a recognised diploma or decoration ought to be distinction enough without it These days of general economy and plain dealing offer an opportunity for abolishing the fetish Surgeons have so long been proud to remain plain "Mr" that they might set the example Would not "John Hunter, F R C S" look sensible, respectful and sufficient on the outside of an envelope?

* * *

The war is providing us with some conversational gambits I was startled to hear a well-mannered friend remarking to a comparative stranger "And how are you off for clothes?" A more matey comment came from a lady in the Mile End Road "That's a nice bit of marg you're wearing, ducky How many coups did you give for that?"

ALERTS LET IN AIR —At a large children's hospital the Ministry of Health, rightly raid-minded, has forbidden the use of any but ground-floor wards This has led to much overcrowding, and members of the staff have been concerned about difficulties of ventilation Thanks to one of the odd compensations of war these fears are misplaced The matron gives it as her opinion that ventilation has never been better, as the nightly alert sounds the lights are put out and all the windows are opened to their fullest extent It's an ill air where nothing's to be gained due to the accumulation of precipitated acetylsulphapyridine in the form of uroliths which may cause complete obstruction of urinary excretion In the case of sulphathiazole we have shown[6] that the renal lesion which results from the continued administration of massive doses of this drug to animals (*Macacus rhesus*) is a result of the precipitation of the drug in the renal parenchyma The picture of the essential pathology is that of a series of small acute inflammatory reactions surrounding acellular foci which contained crystalline material This crystalline material has been isolated and identified as a mixture of sulphathiazole and acetylsulphathiazole, the former compound predominating

The urine of patients given large doses of certain sulphonamide compounds not infrequently contains masses of insoluble crystals, and there have been numerous reported cases in which this type of toxic reaction has caused serious disturbance[7] or even death[8] The damage to the renal parenchyma following the continued administration of excessive doses of 1 or more g /kg /day of sulphathiazole to normal monkeys may be aptly ascribed to physical traumatisation of the tissues rather than to any chemotoxic action of the drug , the traumatising agent being the crystals of sulphathiazole which have precipitated in the collecting tubules We have repeatedly observed collecting tubules with normal epithelium both proximal and distal to a small zone of acute inflammation in which the epithelium has been completely eroded or which has undergone severe degenerative changes The central portions of such inflammatory zones invariably contained small deposits of crystalline material

Our experimental work, for the most part, was carried out on adult *M rhesus* monkeys kept in isolated cages and fed on a normal diet Five such animals received a dose of 1 g /kg /day of sulphathiazole by stomach tube The dose was divided into three equal parts and administered at 8 hour intervals Daily blood samples were taken for the determination of the drug content midway between the morning and afternoon doses Periodic samples were analysed for non protein nitrogen, A second series of five animals were treated in the same way except that they were given 1 g /kg /day of sulphathiazole and 1 g /kg /day of sodium bicarbonate In both series medication was continued for 28 days

Four of the five animals in the first series died during the course of medication All of these animals showed a large terminal rise in the concentration of the drug in the blood which was associated with a large rise of the N P N values These deaths occurred on the 7th, 10th, 13th and 28th days of medication respectively Autopsy showed severe inflammatory lesions of the renal tract involving the renal medulla, cortex and pelvis, the ureters and the bladder These lesions have already been described in detail In the second series no untoward effects were observed and all animals survived 28 days of medication N P N values at all times were within previously established normal limits In two animals of this group sacrificed on the 29th day no macroscopic lesions could be found and histological examination revealed only very slight generalised parenchymatous degeneration No acute lesions were observed The detailed protocols of this experiment will appear in the near future[6]

The great differences between the pathological picture evoked by this dose of sulphathiazole when administered alone and in conjunction with a maintained alkaline regimen cannot be attributed to a diminished absorption of the drug from the gastrointestinal tract with a resultant lowering of the blood concentration As we have shown in an earlier communication[9] the administration of alkali with sulphathiazole increases the rate of absorption of the drug in both animals and man, and produces a higher blood concentration than that which results from the administration of the same quantity of the drug alone This finding was borne out in the present study those animals on the sulphathiazole and bicarbonate regimen showed a generally higher blood concentration than those on sulphathiazole alone

In our opinion, the striking difference in the renal lesions in the two series can only be attributed to an increased solubility of the drug in the slightly alkaline urine resulting from the administration of the bicarbonate, which is *sufficient to prevent the precipitation of* the drug in the renal parenchyma and thus maintain the integrity of renal function, in spite of excessive medication

Winthrop Chemical Company, Inc ,
New York

D R CLIMENKO
O W BARLOW

GASTRIC ACIDITY IN INFANCY

SIR,—*No conclusions can legitimately be drawn* concerning the physiology of gastric secretion from Miller's recent investigations which you annotated on May 10 (p 605) For some reason he analysed the resting juice only Free acid is absent from the resting juice of a large proportion of normal people, and it is absurd to conclude that its absence indicates that a baby —or an adult—has achlorhydria In 117 consecutive test-meals given at the Radcliffe Infirmary there were 17 cases of complete achlorhydria, half of them in patients with anæmia or carcinoma of the stomach Of the remaining 100, in all of which free acid was present in some of the patients, exactly 50 had no free acid in the resting juice This is what one would expect from Bennett and Ryle's[1] observations in healthy medical students, which showed that only 4 per cent had complete achlorhydria, whereas 50 per cent had no free acid *in the resting juice The secretion of acid occurs in* response to the biochemical and psychological effects of taking food , consequently in the absence of food free acid is frequently absent in normal people

Oxford

ARTHUR F HURST

RAPIDLY DEVELOPING SILICOSIS

SIR,—I am appreciative of your comments (*Lancet*, March 29, p 422) on my review of so-called acute silicosis In your brevity, I may add you have more succinctly reviewed this subject than I had in several pages There is, however, a misinterpretation of my statement that "These metastatic lesions are foci of macrophages, which do not show the typical histology of silicotic nodules and may be areas of reticulo-endothelial hyperplasia rather than true metastases " I was unable to study these *foci by the micro-incineration* method to prove or disprove their silicotic origin I did not wish to imply that previously reported metastatic foci were not typical adult *silicotic nodules* This correction should have been made before it went to press , however, at the time I did not see this implication

Tuberculosis Hospital,
Cincinnati, Ohio

ROBERT RITTERHOFF,
Director of Laboratories

CASUALTY ORGANISATION BY THE HOME GUARD

SIR,—Dr Gordon Ward's admirable letter illuminates a situation which has not hitherto received attention from the profession or the public, and now calls for a sympathetic response There is, however, one sentence which is misleading He says "I do not include the Emergency Medical Service because this is a hospital service " It is true that it is often convenient to speak of the emergency hospital organisation as the E M S , just as it is to speak of the first-aid (or stretcher) party service the first-aid post service and the emergency street-ambulance service collectively as the A R P casualty services The distinction has a genuine constitutional significance, because the Minister of Health has a *direct statutory* responsibility for the hospital organisation whereas the local authorities have the primary responsibility for the other services But for practical purposes it is essential to consider them all as "Emergency Medical Services " and parts of a single operational machine, including incidentally the inter-hospital ambulances and the casualty evacuation trains From the point of view of the casualty, the important thing is that all those who handle him from the scene of the incident to his discharge from hospital should be conscious links in a single organisational chain The condition ran the risk of being court-martialled and shot, while today they apply for pensions.

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[6] Climenko D R and Wright A W *Arch Path* (in press)

[7] Southworth H and Cook C J *Amer med Ass* 1939 112 1820

[8] Taso, Y F McCracken M E Chen J Kuo P T and Dale C L *Ibid* 1939, 113 1317 Koletsky, S and King, B G J *lab clin Med* 1940 25 1021

[9] J *Amer med Ass* 1941 116 282

[1] Bennett T I and Ryle J A *Guy s Hosp Rep* 1921, 71, 285

These observations are based upon the examination of cases (soldiers and civilians) suffering from the effects of air-raids, and on experience as a medical referee under the Workmen's Compensation Act.

London, S.W.1 WILLIAM A. BREND.

THORACOPLASTY

SIR,—Few will disagree with the general import of Dr. Hurford's paper (*Lancet*, May 31, p. 693) or with the statement in your leading article in the same issue that "thoracoplasty performed by skilled hands on patients who have been expertly selected for the operation does not carry such a terrifying mortality as many people have supposed", nor can it be doubted that it allows the return to work of a large proportion of patients suitable for the operation who would otherwise shortly die. Without statistical examination, Dr. Hurford's apparently small numbers do not admit of any additional conclusions, but his paper and the leading article call for comment.

Dr. Hurford's cases show an operative mortality of 11% among 54 patients who underwent thoracoplasty for "parenchymatous" disease. But even this figure can be reduced, as is shown by R. H. Overholt's operative mortality (deaths within 3 months) of 2.2% among 490 thoracoplasty patients aged 17–39 (*Amer. Rev. Tuberc.* 1940, 41, 143). Dr. Hurford is chary of recommending thoracoplasty for patients over the age of 40; of his 54 patients only 6 were over 35. Overholt gives results of thoracoplasty on 162 patients aged 40–65 (of whom 43 were over 50, and 4 over 60), with an operative mortality of 6.8%, and a late mortality, due to tuberculous disease, of 4%. After a period of 6–90 months, 71% were considered "apparently arrested" or "quiescent," and 13% more improved; the sputum became negative in 87%. Of the cases selected for operation, 30% had active bilateral disease, and 14% presented complications. These figures can be left to speak for themselves. Your leader shows vision in recommending consideration of thoracoplasty at an earlier stage of the disease than has been the practice hitherto. But I feel you are divorced from pathological realities when you say that "most of the attention in selecting suitable patients is directed towards making sure that any active or exudative element is minimal". Are we really justified in speaking of any cavity with positive sputum as non-active or even as showing only "a minimal" active element? What is an exudative element? Is it not time the artificial distinction between "exudative" and proliferative disease, born of clinicians and seized upon avidly by surgeons, was decently buried? That the distinction can be carried to quite unjustified lengths is illustrated by Dr. Hurford's statement that the radiograms "in all cases except 1 showed proliferative changes, and most showed fibrotic elements as well; 12 (22%) showed exudative foci."

In spite of the work of Medlar and his co-workers, begun over 15 years ago, blood examinations do not appear to have caught on. Authors often speak of having found these examinations "useful" but little of scientific worth has been brought forward to substantiate these claims. The immunological aspects of tuberculosis are so complex that it would indeed be fortunate if a corpuscular ratio or a synthetic "index" were to give a true and concise picture of resistance (natural and acquired) or toxæmia. That these investigations may show which way the wind is blowing, that they require further study, and therefore that their practice should be encouraged cannot be denied; but this is a far cry from allowing the blood picture by itself to cause postponement of collapse therapy or influence rejection of a surgical measure. Dr. Hurford speaks (rather lukewarmly, I thought) in favour of blood examinations in choosing patients for thoracoplasty; he admits that the erythrocyte-sedimentation rate has never seemed so useful as the full examination, but thinks it has some value. But the table he gives, presumably in support of this statement, indicates that the sedimentation-rate by itself is just as useful as the von Bonsdorff count and Houghton index. Later in the paper he says that in two or three cases operation was indefinitely deferred because the blood of the patients "seemed unduly poor", and that he now feels they should have been given the benefit of thoracoplasty. One can only heartily endorse his conclusion that "though a patient should of course be made as fit as possible before operation, there may be a peak of improvement beyond which his disease will not allow him to rise, and at that point no laboratory figures should be allowed to offset the clinical indications for thoracoplasty."

Your leader, while drawing attention to blood examinations, omitted to mention another, perhaps more important, factor in choosing patients for thoracoplasty. Investigation of the cardiovascular system is essential, not only in the older age-groups, and should not be perfunctory. Tuberculosis physicians and surgeons are also realising the importance of investigating fully the functional reserve of the lungs, both in regard to their respiratory and their gaseous-exchange functions (Kaltreider, N. L., Fray, W. W. and Philips, E. W. *J. thorac. Surg.* 1938, 7, 262; Harter, J. S., Overholt and Perkin, H. J. *Ibid*, p. 290; and Lambert, A. V., Berry, F. B., Cournand, A. and Richards, D. W. *Ibid*, p. 302). These investigations are likely to be particularly valuable since the method of bronchospirometry, introduced by Jacobæus several years ago, enables each lung to be examined separately (Zavod, W. A. in *J. thorac. Surg.* 1940, 10, 27 and 32). It is to be hoped that surgical units for the treatment of pulmonary tuberculosis will in future concentrate at least as much on this work as on the more nebulous blood pictures.

Staines. G. GREGORY KAYNE.

RENAL LESIONS RESULTING FROM SULPHATHIAZOLE

SIR,—It has been pointed out that while there is a rational basis for the administration of alkali during the course of therapy with sulphanilamide, no such rationale exists for the use of alkali during therapy with sulphapyridine or sulphathiazole.[1] This statement is true insofar as the production of acidosis is concerned, for neither sulphapyridine nor sulphathiazole will produce the alkali loss known to follow the administration of sulphanilamide.[2 3] It fails, however, to take into account one important physical property of these drugs: they are more soluble in neutral or slightly alkaline media than in acid media (see table).

AQUEOUS SOLUBILITY OF SULPHATHIAZOLE AND ACETYL SULPHATHIAZOLE IN RELATION TO pH AT A TEMPERATURE OF 37° C

† pH = Potentiometric Sul = Sulphathiazole
Asul = Acetylsulphathiazole

† pH	Aqueous solubility (mg./100 ml.) at 37°C		† pH	Aqueous solubility (mg./100 ml.) at 37° C	
	Sul	Asul		Sul	Asul
5.08*	97		6.6 **	113	8.8
5.29*	96		6.8 **	125	10.9
5.31*		6	7.0 **	140	13
5.52*	98	6.4	7.1 **	163	
5.74*	99	6.6	7.18**		16.5
5.84*	97		7.24**	200	
6.02**	96	6.9	7.38**	214	
6.2 **	99	6.8	7.5 **	234	
6.4 **	106	7.3	7.6 **	244	31.2

* Phthalate buffer system ** Phosphate buffer system

The practical importance of the increased solubility of these compounds as the pH of the menstruum approaches neutrality or becomes alkaline is of the highest order. One of the principal toxic reactions of sulphapyridine and sulphathiazole is their tendency to form calculi in the renal tract with a resultant interference with renal function. Antopol and Robinson,[4] and Gross and his colleagues[5] have shown that such lesions may be produced experimentally by the administration of sulphapyridine and that they are fundamentally

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1. Long, P. H., Haviland, J. W., Edwards, L. B., and Bliss, E. A. *J. Amer. med. Ass.* 1940, 115, 364. Long: Personal communication.
2. Southworth, H. *Proc. Soc. exp. Biol.* 1937, 36, 58.
3. Beckman, W. *J. clin. Invest.* 1938, 17, 538.
4. Antopol, W., and Robinson, H. *Proc. Soc. exp. Biol.* 1939, 40, 428; *Arch. Path.* 1940, 29, 67.
5. Gross, P., Cooper, F. B., and Lewis, M. L. *Proc. Soc. exp. Biol.* 1939, 40, 148; *Urol. and Cutan. Rev.* 1939, 43, 429.

and I feel that route-marching with full pack and an er-zealous sergeant-major during physical drill, coming the fortnight after inoculation, may well lie at the root the matter

Where is this concentration of dosage to end ? Do we e 2000 million organisms per c cm in a suspension accine because we are afraid to go bigger on account of xic reactions, but would gladly do so if we could ? Do e want to go for a larger and larger harvest of blood glutinins or are such big agglutinin figures obtained at e expense of some other more valuable antibodies ? e know that they tend to subside rather quickly In ture the stimulus is seldom large and sudden, but ually mounts from a small beginning, and we might ell take a leaf out of nature s book and begin with a ery small sensitising dose The mechanism may actu-lly have two kinds of response, depending on the dose nd the spacing or one to multiple small stimuli, and nother to a sudden large stimulus I shall not be rprised if further research shows that three smaller oses longer spaced give a better working protection, hough less humoral evidence of such, than our present hock tactics And during the time the immunity is eing built up we may gain some advantage by giving n extra ration of vitamin C and guarding against undue atigue In mass immunisation, three doses are of course ifficult but if we are going to combine several antigens t might be advisable not to embark on the job until we ave gone somewhat deeper into these questions In articular we want more light on, first, the effect on general immunity of placing the mechanism under train to a particular antigen , secondly, on whether ne immunity mechanism has more than one type of esponse, for example, a sudden quick subsiding and a lower more durable , thirdly on the effect of fatigue fter inoculation , fourthly on the relation between poor esponse and shortage of vitamin C , and finally, on whether the two-big-shots method gives us the best type f result for public-health purposes

Durban South Africa   B F SAMPSON

FRIENDLY FOREIGN DOCTORS

SIR —May I as a Czechoslovak doctor express my opinion regarding your leading article and Prof Greenwood s letter of May 31 ? Most of us who came to this country did not intend to settle down here and compete with British doctors but we thought of this country as a temporary refuge where we could wait for an opportunity to go overseas When the war broke out our intentions altered with the prospect of returning home after a victorious end and eagerly we offered our services to this country I can appreciate the view that British medical training differs in some respects from the continental, and I do not think that we should be able to fulfil immediately all the duties of a resident medical officer especially with regard to writing up records and prescriptions , the English anæsthetic technique is also different from ours

All this speaks against the employment of foreign doctors but there are also arguments in our favour Every one of us is anxious to fulfil his medical duties and adopt your ways and will try to accustom himself to the best of his ability Those of us who have surgical experience will soon be able to assist again The same applies to ether-narcosis to which we are used Most of us have years of experience in private practice which will certainly enable us to make a better diagnosis than a beginner May I suggest a short period of training in the British ways of hospital work to overcome existing difficulties ? You can be assured of our readiness to help

When we return home at the end of the war many things which we have seen and learned here should form a basis for friendly collaboration, both political and scientific

AN ALLIED DOCTOR

The June number of the *Proceedings of the Royal Society of Medicine* will contain in the section of medicine a discussion on the nature and treatment of the effort syndrome by Dr H J Starling, Dr Paul Wood and Dr Maxwell Jones, and in the section of psychiatry a paper by Dr Aubrey Lewis on psychiatric aspects of effort syndrome These two reports will also be issued as a combined reprint (1s post free from the editorial office, 1, Wimpole Street, London, W 1)

Medical News

University of Oxford

The Rockefeller Foundation have made a grant of £900 to the Nuffield department of surgery to pay the salaries of Dr Eric Guttmann and a trained social worker in psychiatry Dr Guttmann is to carry out an investigation into brain injuries

The university is making a grant to the department of biochemistry to carry out a nutritional survey and a study of antiseptics in relation to burns

University of Cambridge

On June 6 the degree of M.D was conferred by proxy on J O Poynton

University of Manchester

A second week-end course on health in the factory will be held at the medical school on June 28 and 29 The course, which has been arranged in collaboration with the Association of Industrial Medical Officers, is intended for medical practitioners Further particulars will be found in our advertisement columns

Society of Apothecaries of London

At recent examinations the following, having completed the final examination, are granted the diploma of the society entitling them to practise medicine, surgery and midwifery

R M Ellison, Leeds W H Morgan Cardiff S G L Klein St Mary s A L H Smith Guy's N A St C Marley Guy s O Sookias Camb and Bart s G H Miles St Mary s, W J U Tin Lond Hosp

Among those appointed to the distinguished service order for gallantry in the withdrawal from Greece is Surgeon Lieutenant A G Campbell, M B , R.A.N R

Since publication of the last list of subscriptions to the Medical War Relief Fund over £1400 has been received

A meeting of the Paddington Medical Society will be held at 8 45 P M on Tuesday, June 17, at St Mary's Hospital, W 2 when Dr G de Swiet will give his presidential address on the place of the doctor in the community of tomorrow

On Thursday, June 19, at 4 P M , Mr J Ramsbottom, D Sc , will give a Chadwick lecture at the Chelsea Physic Garden Swan Walk, S W 3 He will speak on the inter-relation of man and fungus in health and disease

A lecture on the nature of the self will be delivered to the British Institute of Philosophy by Prof H H. Price, at 14, Gordon Square, London, W C 1, on Friday, June 20, at 5 P M Tickets can be had on application to the director of studies, at that address

On Thursday, June 19, at 5 P M , at the section of neurology of the Royal Society of Medicine, Squadron-Leader Denis Williams will read a paper on electro-encephalography in trauma to the brain On June 20, at 4 P M , at the section of physical medicine Dr Philippe Bauwens will discuss the thermionic control of electric currents, and at 5 P M on the same day at the section of ophthalmology Mr T M Tyrrell will speak on war injury of the eyes

In the *Times* of June 6 it is reported that Mr Dudley Wright consulting surgeon to the London Homœopathic Hospital, and his wife are prisoners in Germany Mr and Mrs Wright were on board the *Zamzam* which was sunk on April 17

Dr J C Martin, secretary of the Irish Medical Free State Union, has resigned his post on his appointment as registrar to the Irish branch of the General Medical Council Dr Martin was the first medical secretary of the union, which now has 934 members, and his efficiency and courtesy have contributed largely to its success

The following have been appointed to the council of the Imperial Cancer Research Fund for the ensuing year chairman, Prof H R Dean, F.R S , vice-chairman, Sir Cuthbert Wallace , Elizabeth Wills Allen fellow, Dr L Foulds , and Alice Memorial fellow, Mr R J Ludford, D Sc Prof James Young has been appointed a governor of the fund by the Royal College of Surgeons of Edinburgh and Prof T J Bosworth, D V S M , by the Royal Veterinary College and Hospital unity of the whole organisation is recognised in the position of the D G E M S , who is an officer of both the Ministry of Health and the Ministry of Home Security and responsible as such not only for the central medical direction of all the services mentioned but also for the first-aid training of the whole of the A R P services No doubt the War Office, the headquarters of Home Defence Services, and the Ministry of Health are in close communication on all aspects of this problem, but it is important that the members of the profession and others whose help is rightly solicited should appreciate the position of the E M S

AN INTERESTED PARTY

ATYPICAL PNEUMONIA

SIR,—In a recent leading article (May 17) on atypical pneumonia, and in particular on acute pneumonitis, you omitted to mention that in this country the condition was first described by A M Gill (*Middlesex Hosp J* 1937, **37**, 20) In his second paper (*Brit med J* 1938, **1**, 504) Gill called attention to certain differences between acute pneumonitis and disseminated focal pneumonia as described by Scadding and it is probable that the two names are not synonymous as you suggest

London CHRISTOPHER HARDWICK

POSTWAR HOSPITAL SERVICES

SIR,—My experience in the Emergency Medical Service since the outbreak of war has provided what my pathetically scientific mind considers to be an interesting control experiment on the very debatable problem of the organisation of our municipal hospitals In September, 1939, I was sent to a county-council hospital where along with my colleagues, all of us from a well-known teaching hospital, I was treated with the utmost contempt by a medical superintendent who not only considered himself a superb administrator but had also an overwhelmingly high opinion of his surgical, medical and obstetrical capacities No job was considered too menial for us to do , not a tithe of respect was paid to our clinical opinion, and any suggestion from us, no matter how politely expressed, was automatically turned down The Sector Officer was sympathetic to our oft-repeated complaints but helpless in the face of the childlike faith which the M O H of the county had in his medical superintendent Ultimately, however, and by degrees we all found ourselves in more congenial surroundings, convinced that whatever our lot might be after the war we would starve rather than go anywhere near a hospital run by that local authority On the other hand some of us still felt that it was not fair to condemn the whole system of municipal hospitals simply on this one experience and that it was the man and not the machine that was to blame

Some months later I found myself transferred to yet another hospital run by the same authority, but this time everything in the garden seemed to be lovely The medical superintendent was a product of a well-known famous teaching hospital and had received the appointment without any previous experience of council hospitals Now we would be able to demonstrate how a hospital could be run with a whole-time staff each with our own beds but sharing our good " cases " and having joint consultations just when and where they were considered necessary Not for us would be the disturbing factor of a " dictator " altering our treatment without consulting us or discharging patients when he periodically made a complete round of the hospital And so it began—but alas our hopes were doomed to early disappointment Ere long bureaucracy with a capital B appeared on the scene Our superintendent became more and more autocratic in his ways , where, originally, we had been consulted before any new policy was adopted we gradually found that the decision was taken without consultation " Dud cases " were admitted to our beds while his beds tended to collect the cream of the admissions , patients were examined in our absence and their treatment changed , patients were discharged without our knowledge , even one's own outpatients were admitted to someone else's beds We were back in the bad old days of the early months of the war, with the added insult that it was all so unexpected

The one consolation is that it has been an interesting experiment, and the tentative conclusion I draw is that it is the machine that is at fault and not necessarily th man If the hospitals of the future are to be run on th basis of a whole-time medical staff, then the one essenti is that the medical superintendent must be purely a administrator with, of course, charge of a few beds of hi own should he wish to maintain his clinical intere But—and this is the point which I wish to stress—h must have no jurisdiction over the beds allotted t members of his staff These must be of a standar sufficiently high to be entrusted with complete medica surgical and obstetrical care of their patients, and th medical superintendent must have no control over them An administrator is undoubtedly necessary, and for suc an administrator a medical training is essential , bu the general policy of the hospital on the clinical side mu be in the hands of a committee consisting of all the seni members of the staff The medical superintende would probably act as chairman of this committee, bu his only right of veto would be on the grounds of expens and in this connexion the medical committee wou have the right of appeal to the medical officer of heal for the area Very few men granted complete power ov the medical staff could perform their duties witho deteriorating A man who knows that the full leg responsibility is his and who is the servant of a lay publi health committee is almost bound to adopt dictatori methods

OBSERVER

RESISTANCE OF THE NEW RECRUIT

SIR,—I have lately seen your extracts of Colon Bensted's Harben lectures, and I should like to raise point or two in connexion with the difficulties of ma immunisation

It seems important that we should know whether th immunity mechanism works as a whole, and can on be either wholly stimulated or wholly depressed , whether it works in a locular sense, so that when a stra is thrown on one compartment it does not necessari impair the function of another Perhaps we should fir decide whether existing basal immunities are like throw off products, with a separate existence, or whether the depend for maintenance on the well-being of the bod Solution of these questions might help us to kno whether, by making repeated calls on the syste for antibodies (enteric, diphtheria, tetanus) we we running any risk of depressing resistance to a disea like cerebrospinal fever This disease seems to be pec liarly associated not merely with warfare but with ne recruits in a military camp I agree with Fairbroth that fatigue in soft material is probably a potent cau of generally depressing a recruit's resistance But suggest that undue fatigue, falling in the fortnight aft each dose of a T A B inoculation, is the combinati that does the real damage We focus all our attention the immediate toxic reactions of a vaccine in the first hours and tend to forget that the immunity mechanis is under strain for at least a fortnight after that Here may lie the explanation of the new recruit datum Th high incidence of virus diseases with pneumonic com plications in these men might be explained in the san way

In Natal the medical command elected to use a conce trated detoxicated extract of T A B organisms for recruits The antigen concentration of this extra works out at about eight times that of the familiar T A vaccine containing 2000 million organisms per c c These men could all be considered good material an accustomed to sport, yet the sickness-rate of the cam was so great that the press took it up, and there was inquiry In one camp of 7000–9000 men there were cases of cerebrospinal fever, and influenzal pneumon was equally prevalent The military medical authori held, and do hold, that this amount of sickness could adequately explained by a combination of low resistan of new recruits, some unavoidable shortcomings accommodation, very cold weather, the effect of dus and the general tendency for infection to spread in cam circumstances They have great faith in the vacci used, for it has been tried out extensively in mine nativ for some years One of the chief advantages claimed f this extract is that it produces hardly any local or gener reaction, though my experience in this regard has bee unfortunate Here, however, we have an eloque example of the resistance of new recruits breaking dow absence of light, and to their clinics for proof that the ill health attributed to absence of light is really so caused The results of the Birmingham clinic suggest that there is no disease caused solely by poverty of actinic rays, but that it is an important accessory in the production of some pathological states Of 336 cases of "bronchitis and asthma" 112 were cured, and this proportion of cures is common to most conditions for which children receive light treatment It would not be justifiable to attribute the cure to the treatment, but the experience of recent years confirms the value of ultraviolet light in smoky towns, though it does not support the exaggerated claims made for it when it was introduced In the orthopædic department only 83 children with rickets, but 40 of spastic paraplegia, were seen among 723 cases

Dr C L C Burns, the director of the child-guidance clinic, says that there have been few cases where war conditions have been an important contributory factor to behaviour disorders, but it has been noticed, and confirmed by teachers, that after air-raids there is an increase of excitability and aggressive behaviour and diminished powers of memory and concentration, this is an expected physiological response in mentally healthy children Only 36 children with "evacuation problems" were seen at the clinic of whom 11 had enuresis and 9 were stealing cases Dr Burns says that he is "beginning to get the child of 7-plus who has missed a great deal of school and is now very backward in his school lessons It seems likely that there will be a considerable number of children retarded owing to this reason, and suffering emotionally from the consequent anxiety"

Infectious Disease in England and Wales

WEEK ENDED MAY 31

Notifications —The following cases of infectious disease were notified during the week smallpox, 0, scarlet fever, 1114, whooping-cough, 4121, diphtheria, 886, enteric fever, 101, measles (excluding rubella), 13,031, pneumonia (primary or influenzal), 1161, puerperal pyrexia, 132, cerebrospinal fever, 254 (London 16, Liverpool 12, Birmingham 10), poliomyelitis, 5, polio-encephalitis, 0, encephalitis lethargica, 3, dysentery, 113, ophthalmia neonatorum, 82 No case of cholera, plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospitals of the London County Council on May 28 was 1846, including scarlet fever 231 diphtheria, 337, measles 398, whooping cough, 430, enteritis 11, chicken pox, 80 erysipelas, 57 mumps, 7, poliomyelitis 2, dysentery 24, cerebrospinal fever, 47, puerperal sepsis, 10 enteric fevers 10 german measles, 15 other diseases (non infectious), 93 not yet diagnosed, 94

Deaths —In 126 great towns there was no death from smallpox, 2 (0) from enteric fever, 1 (0) from scarlet fever, 29 (3) from whooping-cough, 11 (1) from measles, 17 (1) from diphtheria, 24 (1) from diarrhœa and enteritis under 2 years, and 24 (2) from influenza The figures in parentheses are those for London itself

Burnley and Hull each reported a death from enteric fever There were 3 fatal cases of whooping cough at Liverpool, and in the same week Glasgow reported 11

The number of stillbirths notified during the week was 186 (corresponding to a rate of 35 per thousand total births), including 16 in London

Parliament

Shared Homes

Today very few Englishmen have their castles to themselves, for as Mr James Griffiths pointed out in the discussion in the House of Commons, there are now five kinds of evacuees—official ones, unofficial ones the services, war workers and a fifth group, which he described as emergency evacuees These people are the concern of no less than ten government departments, and at present there is often more competition than coordination about billeting arrangements He thought the burden of reception often proved too heavy for the smaller local authorities and suggested that the county council might be a better unit of organisation Sympathy and understanding are needed if these townsfolk are to be made welcome in the county, and if need be fish and chips must be elevated to a place among the social services Dr Haden Guest thought it unfair to ask a woman to choose to break up her home Evacuation should be made compulsory in certain areas He thought the scandal of social conditions revealed in the early days of evacuation was a healthy shock to the nation Many tributes were paid to the kindness and tolerance shown by hosts and guests but Mr D Kirkwood was less satisfied and said it was easy for the cultivated mind to make excuses Mr E Brown who spoke early in the debate said that revolution was being changed into evolution, and the word "impossible" amended by "nevertheless" "Plan," "region," "compulsion" and "coordination," he averred, were fine words but they did not solve any problems—and to the delight of the House Mr Brown became very fierce In all the Government had requisitioned 27,402 houses in England and Wales,[1] and though some of the younger guests had turned out to be tough guys Mr Brown thought on the whole we had done fairly well He had always found the smaller councils very efficient Mrs Mavis Tate urged the need for an overhaul of our rural water supplies, and pointed out that the housewife seems to dislike sharing her kitchen more than her home Mr G Strauss was distressed that so many children were still to be found in public shelters He thought that enough use was not made of the power to evacuate children on medical grounds for instance in the first three months after its inception only about twenty children were sent away He also urged that the chronic sick should all be got out of London Mr T Johnston, who summed up, paid a tribute to the goodwill and courage that had been shown, but said we must remember that it was impossible to cope with the problem on peacetime standards He thought nowadays that no-one had any more right to two houses than to two rations of butter

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[1] 2906 houses for London mothers and children 21,726 for the homeless 233 for unorganised refugees, 344 for difficult children, 132 for school children (there are also 30 camps under the National Camps Corporation) 166 for maternity homes, 209 for sick bays and infectious hospitals

LOOKING AFTER THE UNDER-FIVES

The growing disturbance of family life by the war has increased the need to provide suitable accommodation for young children, and the Minister of Health and the President of the Board of Education have decided to set up jointly war-time nurseries both for evacuated children and for the children of women war-workers whether evacuees or local residents[1] Maternity and child-welfare authorities will be responsible for the arrangements and should send their proposals to the senior regional officer of the Ministry of Health Education authorities and billeting authorities will cooperate in the scheme According to the local needs variations of two main types of nurseries will be provided Part-time nurseries will provide for the care and training of children between the ages of 2 and 5 and will be open during school hours under the direction of a teacher Whole-time nurseries will give full day-time care and maintenance to children of all ages up to 5 in districts where mothers are in full-time employment These nurseries will be open for 12–15 hours a day and will provide meals and facilities for bathing and resting, and there will be trained nursing staff under the direction of a matron who will be a fully trained (general or children's hospital) nurse But the activities and social training of the children of 2–5 will be supervised by a teacher At whole-time nurseries where children receive all their meals the mothers will pay 1*s* a day, at part-time nurseries where no meals are provided payment will be 3*d* a day, and another 3*d* where a midday meal is given No payment will be asked from evacuated mothers who are not in employment and cannot afford to contribute and apart from these contributions the Government will pay for the nurseries Arrangements will be made by the medical officer of health for the regular medical inspection and supervision of the children

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[1] Ministry of Health, circular 2388, Board of Education, circular 1553

At the annual meeting of the Faculty of Radiologists on May 23, Lord Horder and Prof Henry Cohen were admitted to the honorary fellowship

Obituary

ROBERT PERCY SMITH

M D LOND , F R C P

Dr Percy Smith, consulting physician for mental diseases to St Thomas's Hospital, died at Durley, Southampton, on June 4, at the age of 87 He qualified from St Thomas's in 1878 and took his M B with gold medal the following year Further study in Vienna and house-appointments at his own hospital prepared him for his specialty and he was early appointed resident physician at Bethlem Hospital where his chief was Sir George Savage The two men were poles apart in character and temperament The senior was sparkling, original, an arresting and dramatic personality who blamed himself for dissipating his energies , the junior was calm, concentrated, as precise in mind as he was neat in appearance—a type of mind embarrassing to the glib, superficial, and self-assured, for whom indeed Smith frankly had no use But those who worked with him knew his quality, and Dr Edwin Goodall, one of his clinical assistants in the mid-'eighties, writes " Under Smith no slackness or slovenliness was allowed in our rounds or records With others I suffered occasional reproofs, which were merited and gently administered by a gentleman He was firm but not austere and had a saving sense of humour "

As a teacher at Charing Cross and later at St Thomas's Smith was eager to enhance the prestige of his specialty, and in 1910 he was among those who urged the Royal College of Physicians to institute a diploma in psychiatry For many years he examined for the University of London, and he was president of the then Medico-Psychological Association in 1904 and of the section of neurology and psychiatry of the R S M during the last war His mind was critical rather than original, and he had no bent for research He excelled in clinical work, while his writings on the Insane and the Law, Defects in the Working of the Lunacy Act, Voluntary Boarders in English Asylums reflect his interest in administrative problems

For many years Percy Smith was in consulting practice, yet it is impossible to picture him as the conventional Harley Street specialist Conscientious and fair-minded, yet not wanting in sympathy, he was there to advise those who preferred an opinion of ungarnished honesty

WILLIAM GRAY

M B EDIN , M CH ORTH LPOOL, F R C S E

William Gray was killed in one of the recent raids on Liverpool He came from Vancouver Island, where his father is a doctor, to Edinburgh for his medical education, qualifying in 1932 After acting as house-surgeon at the Edinburgh Royal Infirmary, he held several house-posts elsewhere, and then studied for the M Ch Orth at Liverpool in 1938 A year later he gained the Edinburgh fellowship, and then came back to Liverpool as resident surgical officer deputy medical superintendent and orthopædic surgeon at Mill Road Infirmary, a post which he held until his death at the age of thirty-three

Drummond Shiels Edinburgh

A competent general surgeon, Gray's work in orthopædics was most promising Straightforward, open and solid, he made his mark on the life of the infirmary in the comparatively short time he was there His consultant seniors were glad to have his reliable and cheerful help , and he had a genius for making his juniors in " the house " feel part of the hospital family With natural and unassuming kindness he took them under his wing, and before they had been long there they were " Bill " and " John " and " Arthur " and it was good to hear them in the residents' room eager to discuss their patients with him and to have his help in the varied problems that assail a houseman He did splendid work for casualties of the raids Though not officially on duty, he was on his way to give a hand with the casualties of a heavy raid when he was killed instantly His wife, whom he married only last autumn, was formerly a sister at the infirmary

HUGH EMRYS BONNELL

B SC WALES, M R C S , MAJOR, R A M C

Major H E Bonnell was killed last month by enemy action at the age of 35 In 1925 he took his B Sc with first-class honours in physics at the University College of South Wales and Monmouthshire, and began work in the physiological department of the college There he soon became interested in medicine, and he qualified from King's College Hospital, London, in 1931 He took up pathology as his specialty at once, and held appointments at K C H Manchester and Hastings, before he became pathologist at the East Ham Memorial Hospital and consulting pathologist to Runwell Hospital, Wickford This wide experience made him an excellent practical pathologist, and in a busy hospital his quick grasp of essentials stood him and everyone concerned in good stead, while his early scientific training in the physiological department at Cardiff made his opinion on questions of research valuable R S -O writes Bonnell's bluff nature and strong sense of humour won him many friends particularly among hi younger colleagues He was staunch and loyal and it i difficult for those who knew his vitality and love of life t be reconciled to the tragedy of his death

Dr JOHN GERALD ROGERS, who was killed last mont at a London hospital during an air-raid, was educate at St Edward's College, Liverpool, and the University o Liverpool, where he took his M B in 1935 Afte holding house-appointments at the Northern Hospita and at Mill Road Infirmary he came to London to wor under the London County Council He was thirt years of age

Public Health

From the Annual Reports

BIRMINGHAM

Dr James R Mitchell presents the school report for 1940 Birmingham, like Manchester, has a school medical department separate from that of the M O H In peace-time the comparison of the school work of the two cities was always of interest, and their war time difficulties are doubtless similar, but we must not compare the report of Birmingham for 1940 with that of Manchester for 1939 Dr Mitchell gives details of the scheme for medical inspection and follow-up of children about to be evacuated , but in November, 1940, as a result of enemy action, the " carefully prepared plans " came to grief—as most of us expected that they would Birmingham found it impossible to lend its staff to the reception areas but arranged for temporary assistance to be provided on the city's charge In spite of the exceptional difficulties of the times, the school medical department kept up its work In 1940, spectacles were prescribed for 2580 children, of whom 2185 obtained them The error of refraction for which spectacles are most often ordered is hypermetropic astigmatism , of 1266 children refracted and spectacles advised, 576 had this error Next in frequency are simple hypermetropic and myopic astigmatism, of which there were 207 and 239 cases respectively At the ultraviolet-ray clinic 1498 children were treated for various conditions, of whom 485 were cured, 529 improved, 27 showed no change and 457 defaulted In smoky cities there may be no natural actinic light for many months of the year, so that we look to them for evi

ORIGINAL ARTICLES

THE NATURE OF DISEASE IN INFANCY*

By J. C. Spence, M.D. Durh., F.R.C.P.

HYSICIAN TO THE BABIES HOSPITAL, THE ROYAL VICTORIA INFIRMARY AND THE GENERAL HOSPITAL, NEWCASTLE-ON-TYNE

It might be expected that a study of infantile mortality-rates analysed under the certified causes of eath would give some idea of the nature and prevalence f diseases in infancy, but those with experience of xisting methods of certification know how false is such hope. During 1939 Dr F. J. Miller and I conducted personal inquiry into the 272 infant deaths in Newastle which revealed the inaccuracies and difficulties of ertification. The inquiry included every infant death n the city, in each case the attending doctor was interviewed. When the child died in hospital all records and post-mortem findings were available. The practitioners gave frank and full coöperation. Nearly 10% of the deaths (25 out of 272) had taken place without the child having received previous medical attention; usually hese were sudden or unexpected deaths from brief llnesses, yet an attempt had to be made to certify he cause. It was found that at least a third of the total had been certified with an inaccurate diagnosis. Most doctors admitted their difficulty in reaching a satisfactory diagnosis but pleaded the necessity of putting down something which would satisfy the registrar. When in doubt some used stereotyped but often irrelevant diagnoses which they knew would be acceptable. These habits were not confined to family practice for they were found also in hospitals. To give a few examples, a child dead in the 3rd day of a cerebral hæmorrhage was certified as inanition and marasmus; another dead of an acute virulent infection on the 14th day was certified as atelectasis and prematurity; a child dead of an acute infection 7 days after circumcision was certified as infantile convulsions; a child of 3 months dying after a long struggle against neonatal sepsis was certified as malnutrition and inguinal hernia. On evidence like this deductions about the prevalence of disease, and the construction of plans of prevention are haphazard undertakings. When in discussing infant mortality in 1913, Sir George Newman wrote "The principal operating influence is the ignorance of the mother and the remedy is the education of the mother," let us hope that he foresaw an intermediate stage when we doctors would have to educate ourselves.

The position is still worse in regard to morbidity-rates in infancy. It would require a controlled inquiry in a fixed community, to discover the incidence of non-fatal but disabling illnesses, and to estimate the effects of these illnesses on health in later life. Until we have some new method of collecting and correlating vital statistics of disease in infancy we shall not know how much adult disablement is due to inherent faults and how much to acquired disease and injury. The number of mental defectives indicates the need for this, if we accept the estimate of the Wood Committee of 1929 that there were at least 300,000 of them in England and Wales.

TYPES OF DISEASE

It is not yet possible to trace all forms of sickness to their source, for clinical medicine which portrays disease advances before clinical science which explains it; but experience suggests the following broad categories into which the injuries which produce disease in infancy may be placed.

1. Inborn errors of structural development—that is, the congenital anatomical abnormalities.
2. Inborn errors of metabolism.
3. Mechanical injuries.
4. Temporary failure to establish the mechanisms of independent existence.
5. Deficiencies of diet.
6. Neuromuscular disorders of organ function.
7. Infections.

There are other categories of disease, some physical, some psychological, such as follow injury from poisons, from parasites and from parental propaganda. There are also the peculiar and inexplicable disorders which show themselves as neoplasm and leukæmia. But the seven I have outlined are those which best reveal the nature of disease in infancy.

Congenital anatomical abnormalities.—We are familiar with abnormalities which are easily seen, but there are many others affecting lungs, brain and genito-urinary tract which go undetected. In the Newcastle inquiry 10% of infant deaths were due to gross recognisable congenital abnormalities, and the true incidence of infantile deaths due to this cause is probably higher than this figure. But inherited structural faults have wider significance. From what we know of subacute bacterial endocarditis we can presume that they are partly responsible for a good deal of organic disease in later life, by predisposing to infection.

Inborn errors of metabolism.—Garrod wrote: "Just as all living things, and even the individuals of a species, exhibit differences of bodily form, some minute and others conspicuous, so also they differ in their chemical structure and chemical life." Those differences in chemical structure and chemical life which produce alkaptonuria, cystinuria and porphyrinuria are conspicuous because their victims survive to an age at which a diagnosis can be made and because there are known chemical tests whereby to diagnose them. It is probable that there are others which go undetected for want of suitable diagnostic tests, and some of those may be errors of metabolism so gross that the infant survives but for a few hours or a few days after birth. The anatomical abnormalities which cause death within a few hours of birth are easily recognised, but neonatal death from a gross chemical abnormality must sometimes occur and the cause pass unrecognised.

Mechanical injury.—From the Chicago figures of 1936, based on accurate necropsy work, it can be estimated that with an infantile mortality-rate of 40 per 1000 live births, 15% of the deaths would be due to cerebral hæmorrhage. Disablement in survivors is difficult to assess, but our total of 300,000 mental defectives suggests that it may be considerable. Infants withstand mechanical injury better than older children or adults; we have but to watch the healing of an unsplinted broken femur, or the survival of a newborn child with complete high intestinal obstruction for twenty days to realise that. Disablement and death depend more on the force of the injury than on the vulnerability of the infant.

Failure to establish the mechanisms of independent existence results in diseases peculiar to infancy. Their nature tempts us to classify them as inborn errors of metabolism, but since the disorder is often transient and recovery follows, the 2 groups of diseases should be differentiated. Icterus gravis neonatorum and anæmia hæmolytica neonatorum are regarded by Parsons, Hawksley and others as temporary failures of the newborn child to regulate its own blood-forming and blood-destroying processes. Hæmorrhagic disease of the newborn is probably another example of this type of disease, in spite of the recent suggestion that it is due to a vitamin deficiency.

Defective diet.—Whatever defects of diet may be found in older children there are few infants in these days who are not living on an ample and highly vitaminised diet. Scurvy, tetany and nutritional xerophthalmia are now so rare that most young doctors have never seen them; even rickets is seen only occasionally and in circumstances of frank neglect. But a highly vitaminised diet is not necessarily an ideal diet. In spite of the improvement in artificial feeding of infants and the disappearance of severe forms of nutritional disease the possible ill effects of bottle-feeding in comparison with breast-feeding have not been accurately determined. Where artificial feeding may not be the immediate cause of death it is often an accessory before the fact, and no statistical studies of death certificates will reveal this. The study of nutritional disease is turning from the primary forms of

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* An abstract of the Bradshaw lecture delivered before the Royal College of Physicians on March 7, 1940.

Notes, Comments and Abstracts

"THE BEHAVIOUR OF NATIONS"[1]

Mr Morley Roberts has long been recognised as a distinguished writer of fiction Twenty-one years ago he wrote "Warfare in the Human Body," in which he suggested that problems facing students of that most marvellous of living organised communities, the human body—problems of disease and health, of malignancy, immunity, inhibition, heredity, cell-division, evolution, growth, repair and old age—had their parallels and analogues in organised human societies In this he was not going beyond his province, for, as Sir Arthur Keith pointed out in the foreword, Mr Roberts is "endowed with a vast share of intellectual curiosity and gifted with the diagnostic acumen of the born physician" Medicine could do with more such suggestive contributions from competent laymen, but inference based on analogy has its dangers

In his new book Mr Roberts has treated some of his own inferences as basic facts and used them to explain tional and international relations He is a self-laimed disciple of Thomas Hobbes, if people could induced to read "Leviathan," he says, they need dly trouble to read "The Behaviour of Nations" so saying, he underrates both Hobbes and himself "The Behaviour of Nations" lacks Hobbes's philosophic calm, his "genial sarcasm," and his absence of personal prejudice "Leviathan," on the other hand, lacks Mr Roberts's intolerant, yet often amusing and sometimes deserved, invective No two conceptions of the nature of a community or of a nation could be less alike than are the harmonising sovereign Leviathan of Hobbes and the "very low-grade invertebrate organisms" which Mr Roberts alleges that states "really and not metaphorically" are Given these premises, the author's pessimism is natural enough Mutual distrust would seem to be the only wisdom He believes that the less differing nations know of each other the better, because fewer points of contact mean fewer opportunities for conflict Our modern diplomatic forms, he considers, are based on the instincts of our cannibal ancestors, and warns us that "all converse of friendship among nations is dangerous There are no friends among nations"

It is true enough that only by the sovereignty of the general will, whether delegated for a period to one or to many individuals, can peace within a nation or between nations be secured and enjoyed Readers who may infer from this book that permanent peace between nations is a ridiculous ideal, impossible of attainment, should recall the early history of this country, and should also bear in mind that the self-preservative is not the only "natural," or inherent, impulse of man

AN EAST END HOSPITAL CARRIES ON

The Salvation Army Mothers' Hospital is actually doing more work than it was before the war, though not all in London Fifty beds—half the usual number—are being kept open in the wards at Clapton, and seventy-six additional beds have been lent at places in Derbyshire and Northamptonshire The mothers are taken off by train or charabanc when the time of delivery approaches, and some of them have even been found billets in those safer regions later At the hospital in London a bomb destroyed two valuable modern wards and left standing the older houses, ear-marked for demolition This has not proved incapacitating however Mothers delivered in the wards are transferred nightly to the air-raid shelters and brought back to their beds in the morning Visiting husbands, usually on leave, and fire-watchers—business men who never fail in this voluntary duty—help to move the stretchers and carry down the babies District work goes on, the midwives from the hospital have had plenty of experience of deliveries in Anderson shelters or bombed houses by this time, often going to their cases through streets in which shell fragments, not to say bombs, are falling The transfer of beds to ground floor living rooms has added to the difficulties of conducting a confinement in the East End home One of the nurses sums it up as a return to the conditions of twenty years ago At least the rebuilding of London should make it possible to end those conditions for good when peace comes The Mothers' Hospital is in need of £18,000 to meet current liabilities Those wishing to contribute should send donations to General George L Carpenter, 101, Victoria Street, London, E C 4

FROM SHEEP TO SURGERY

Medical biography, both factual and fictitious, has had a pretty good innings recently, and in his latest book Mr Harley Williams finds himself batting on a rather worn wicket "Fingal's Box" (Jonathan Cape. Pp 382 8*s* 6*d*) is the story of a young New Zealand sheep-farmer who sells out and comes to Edinburgh to read medicine in the years immediately after the last war Coming under the influence of an eccentric and boorish pathologist he finds his allegiance divided between surgery, his first love, and research on the influence of the endocrines on tumour growth Somehow he contrives to reconcile the three, and the story ends with him, still in early middle age, making a name for himself as a surgeon-pathologist He has, of course, his ups and downs and also some love affairs, the last and most genuine of which almost causes his professional downfall, but not quite Mr Williams knows what he is talking about and handles even the hackneyed theme of the strange habits of medical students with a certain freshness If he does not always avoid being needlessly and irritatingly melodramatic in describing the commonplaces of surgery, his numerous characters are well and surely drawn, and his long novel sustains its interest to the end

Appointments

ASHWORTH, ALAN, M D Lpool, D T M, D P H M O H for Mitcham

BLUNT ELEANOR, M B Lond, D R C O G, M O in maternity and child welfare department of Birmingham

EASTWOOD, C G, M D Manc D P H M O H for Weston super mare

*GOODWIN M A, M B Lec [illegible] temp asst R S O at Withington Hospital, Manchester

HUGHES, T LLOYD, M D Lpool D P H M O H for Barnsley

MELVILLE JAMES, M B Camb asst R M O at Winchester Emergency Hospital

MOORE Sir ALAN Bt, M B Camb, D P H M O H for Rye

O SULLIVAN, J J, M B N U I temp asst R S O at Crump ll Hospital, Manchester

SHAPIRO, ALEXANDER, M B Lond temp secon d asst M O at Middlesex Colony Shenley

SPITZER, WALTER, M D Prague M R C S residen t obstetric at Kingston County Hospital

VELLACOTT, H D S, M B Camb senior asst R M O at Al Hospital

* Subject to confirmation

Births, Marriages and Deaths

BIRTHS

DIXON—On June 3, at Eynsham, Oxon the wife of Squ Leader F W Dixon F R C S, R A F—a daughter

FITZGIBBON—On June 8, at Wrington, Somerset, the wife G M FitzGibbon, F R C S—a daughter

GILCHRIST—On June 2, at Stanmore, Middlesex, the wi Squadron Leader G Gilchrist M B, R A F—a son

KING—On June 3 at Skegness Lincs, the wife of Surgeon tenant R E King R N V R—a son

LACE—On June 5 at Porthcawl, the wife of Captain E J R A M C—a daughter

PRATT—On June 5 at Fulmer Chase, the wife of Flying O Noel J Pratt R A F V R—a daughter

MARRIAGES

AYLWARD—MUNRO—On June 5 at Tunbridge Wells Roy Dougl Aylward, M R C S, to Effie Campbell Munro

BOLTON—MITCHELL—On May 26, at Alexandria, Reginald Bolton major, R A M C, of Beaconsfield, to Dorothy Mitchell of Iffley Oxford

FIELD—WOOD—On June 7 at Great Gaddesden Philip Charles Field M R C S lieut colonel R A M C, to Alice Ava Wood

MILLING—TODD—On June 9 at Wimbledon Peter Francis Milling M R C S, to Euphemia Margaret Todd

RONALD—SPALDING SMITH—On June 2 at Fairlie James Ronald M D surgeon lieut commander R N V R, to Joan Spalding Smith

RUSBY—BROADHEAD—On June 7 at Nottingham Norman Lloyd Rusby, D M, to Elizabeth Broadhead M B

DEATHS

SMITH—On June 4 at Durley, Southampton Robert Percy Smith, M D Lond F R C P, of Albion Street, W 2, aged 87 staphylococcal diseases In America Rice, Best Frant Abramson (1937) and others have made similar observations These give no clue to the relative incidence of the various infections in infancy Our Newcastle inquiry was carried out in a year free from serious epidemics and at a time when institutional infections of infants were well controlled , there were about a hundred deaths from infective diseases of which 6 were due to tuberculosis 1 to diphtheria, 1 to syphilis, and 9 to whooping-cough . there were 12 deaths from illness which could be called acute infective gastro-enteritis the remainder died from acute infective illnesses some of which appeared to be acute respiratory infections but the majority presented no localising symptoms on which to base a diagnosis

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[1] By Morley Roberts London J M Dent and Sons 1941 Pp 80 12*s* 6*d*

To study and prevent these acute infections in infancy is one of the chief duties of pædiatrics for many pass undiagnosed and are not investigated Most of us are familar with the infective nature of a disease with outward signs like pemphigus neonatorum, but there are others with no localised signs which may kill within 24 hours or lead to wasting and feeding disorders The variety of pathogenic organisms is great but they all tend to produce septicæmia with symptoms of drowsiness and a disinclination for food This may be present within 24 hours of birth with localisation of the infection as a neonatal pneumonia , or more typically an infant may thrive well for a few days then refuse feeds, become drowsy or peevish develop a little diarrhœa and then recover or die At the height of the illness some show an interesting physical sign which I call "canine breathing' ; a short panting form of respiration rising to a rate of 120 to 130 a minute, but not resembling pneumonic breathing The clinical peculiarities of neonatal infections are set out in a report by Guthrie and Montgomery (1939) of illnesses in a Glasgow Hospital due to the *B enteritidis* of Gaertner in which the infants had no dysenteric symptoms but only signs of mild intestinal catarrh followed by septicæmia meningitis or cholecystitis A newborn infant who becomes abnormally drowsy and refuses its feeds and is not suffering from cerebral hæmorrhage should be suspected of an acute neonatal infection

In later infancy—that is at any time after the neonatal period—the acute infections may assume forms lasting from a few hours to several weeks and ranging from fatal toxæmia to mild malaise A description of these although explaining nothing may serve a purpose

The first is an acute illness lasting less than 48 hours th no localising signs and ending in death or recovery. e infant is prostrated or comatose—a state described the northern vernacular as "dead felled" The ness may be so short as to have run its course before edical aid is summoned and into this category must be it some of the cases of infants found unexpectedly dead bed

CASE 3—A healthy child of 7 months in good social circumances was noticed one afternoon to have an almost gnificant nasal catarrh Next morning she was kept doors but played cheerfully in her nursery At 3 o'clock in e afternoon she was feverish and desired to be nursed , by o clock she was limp and quiet At 7 o'clock she was drowsy d refused drinks Seen between 8 and 9 o clock the same ening the child was semiconscious but inclined to throw elf about There were no localising signs Urine no bumin and no pus cells , not cultured for organisms The ebrospinal fluid was clear and normal The child became matose and after a minor convulsion died at 4 o clock in e morning The duration of the acute illness was thus a ttle less than 12 hours. A post-mortem examination was ade and no anatomical lesions sufficient to explain death ere found Cultures from the heart-blood were not made

These fulminating forms of infective illness are not ncommon in infants and have often been described as ue to acute respiratory infections with streptococci It s clear that many organisms other than the streptoccus may be the cause and there may be no clinical r pathological evidence of respiratory disease I have en many illnesses of this type in which the determined oöperation of clinician and pathologist has failed to eveal the cause of the septicæmia

A second type of infective illness is a symptomless pyrexia lasting 4–10 days and ending usually in complete recovery Starting insidiously or acutely, there is feverish drowsiness, with disinclination for food or occasional sickness, but with no localised symptoms or signs The condition may pass to toxæmia with dehydration A trace of albumin with a few leucocytes may be found in the urine and in this and other ways the picture resembles a paratyphoid infection Engorgement of the fauces may suggest that site as the portal of entry of infection This type of illness is to be seen occasionally after vaccination or circumcision even when the primary lesions shows no signs of septic infection Recovery is usually uneventful

A third type of infective illness starts suddenly or insidiously as an acute symptomless pyrexia and after a few days localises to produce signs of organic disease—particularly pneumonia, otitis media pyelocystitis, gastro-enteritis meningitis or skin sepsis

A fourth type is acute primary gastro-enteritis, the "cholera infantum" of former times There is a rapid onset of symptoms with vomiting the stools become dysenteric or copious frequent and loose The characteristic facies with grey pallor and dehydration, is quickly established mortality is high This type of illness can probably be caused by many organisms In some outbreaks dysenteric organisms are found but in newly born or ailing infants organisms which are apparently benign to adults may be the cause

A fifth type of disease is one in which there is no invasive fear or septicæmia and the infection reveals itself first by a localised lesion or multiple localised lesions without symptoms of a generalised illness These may appear in the skin producing onychia and abscesses, or in deeper sites producing osteitis arthritis otitis, empyema or indeed any local lesion This type is characterised by pus formations and brings to light an important principle of infective disease in infancy If an infective disease becomes localised with pus formation an infant shows more power of local resistance than an older patient, provided the infection is not secondarily contaminated by other organisms This explains the unusual power of recovery which some infants show from staphylococcal osteitis and empyema with no treatment other than occasional aspiration of the pus Such cases have been reported by Cass (1940b) and the following is an example of one of them

CASE 4—A healthy male child began to develop swelling just above the left knee-joint at the age of 2 weeks This increased steadily until, at 4 weeks. there was obvious reddening of the skin with swelling of the knee-joint and lower end of the femur The child s general condition was not disturbed , he took his feeds well throughout and continued to gain weight The left sternoclavicular joint became similarly swollen, red and tender The knee-joint was aspirated four times in 10 days, on each occasion the pus contained *Staphylococcus aureus* A radiogram of the femur showed definite osteitis, the course of which was followed by further radiological examinations No operation was performed , the osteitis and arthritis in both joints subsided within 3 months and a spontaneous cure took place, the child remaining well a year after

A description of the clinical course of acute infective disease does nothing to explain by what process an infant may be killed within 24 hours with no local evidence of the primary site of infection or why organisms like the dysentery bacillus have such a tissue specificity in the older child but lack it in the infant It does not explain by what means an organism like the *B lactis aerogenes* may be fatally pathogenic to an infant to become quite innocuous in later life I have two outstanding impressions of infective illnesses in newly born and young infants , first the sudden explosive character of the septicæmic illness without local evidence of the primary site of infection and second the frequent absence of any septicæmic or constitutional symptoms in those few infants who can oppose the infection by immobilising it in a local purulent lesion Rich (1932) experimenting with rabbits showed that inflammation is not a barrier of resistance laid down to oppose a spread of infection but a local phenomenon at the site of infection in tissues which have been sensitised by a previous infection with the same organism This phenomenon is well known in the case of tuberculous infection and may be true of most of the organisms dietetic deficiency disease to the secondary or conditioned forms in which some underlying disease of stomach, bowel or liver is interfering with absorption or assimilation of food Before it is too late it should be possible to turn the clinical studies of deficiency disease in yet another direction by interrogating people who are known to have had severe rickets or scurvy in infancy it should be possible to determine if these conditions have had any remote effect in later life Brief exposure to lead poisoning in infancy causes chronic nephritis 20–30 years later, perhaps the cause of some of the degenerative diseases of adults may be found by pædiatric studies

NEUROMUSCULAR DISORDERS

The term neuromuscular disorders of organ function was used by John Thompson in discussing the mechanism of pylorospasm and pyloric stenosis The clinical effects of those disorders may be present at birth or they may not come into full force until a few weeks after birth They tend to subside after the 6th month There is no direct evidence to suggest that they are true congenital anatomical abnormalities The subsequent history of the affected infants shows that they are not more prone to psychopathic or endocrine disorders than other children Perhaps the true causa ausans is a temporary absence for a few months of a emical substance necessary for coordination of the omuscular functions The most evident example is orospasm with or without hypertrophy of the pyloric cle, others are congenital laryngeal stridor, and the various degrees of colonic dysfunction from spastic constipation to Hirschsprung's disease There is also adynamic ileus of the newborn described by Perrot and Danon (1935), and Gillespie and Rogers (1939) The symptoms of this are evident from birth, and at first are indistinguishable from those due to an impermeable intestinal obstruction, the obstruction, however, is not due to constriction or occlusion but to spastic closure of a segment of the small bowel, the lumen of which is present In some cases this functional disorder rectifies itself in the second week of life and a spontaneous cure takes place

CASE 1—A first child of young parents was born at term after a normal pregnancy and labour At birth it was an apparently healthy male infant, and it cried and slept after birth in a normal manner On being put to the breast towards the end of the first day there was a little vomiting and on the second day when breast feeding was established vomiting became more evident Then for 8 days there was complete obstructive vomiting of deeply bile stained material The infant retained his appetite and breast feeding was continued I saw him on the 6th day when the diagnosis of intestinal obstruction due to a congenital atresia of the bowel seemed *obvious Radiograms showed a big stomach with barium* passing a short way down the jejunum but not beyond On the 8th day vomiting was less severe Thereafter there was a gradual improvement and at 3 weeks all vomiting had disappeared The child is now a boy of 9 in excellent health

It may be argued that this was intestinal obstruction due to a local constriction and not to adynamic ileus, but the site of the obstruction and the clinical feature so resembled other cases of adynamic ileus confirmed at operations or necropsy that the diagnosis can be sustained Gillespie and Rogers in reporting a similar case made their diagnosis after laparotomy Their patient also recovered

Other forms of neuromuscular disorder of bowel function of slighter degree are common The following is, I think, an example, and presents a recognisable clinical entity

CASE 2—A healthy breast fed male infant was well during the first 8 weeks of life, advancing steadily in weight from 7 lb to 9 lb 4 oz At 8 weeks he slept and fed with exemplary regularity, his bowels were a little constipated and irregular, but there was nothing obviously abnormal about the appearance or odour of the stools In the 8th week he began to appear uncomfortable Sleep was broken and there was slight occasional vomiting, once or twice he vomited unexpectedly in a manner slightly suggestive of pyloric stenosis At 11 weeks the weight had fallen to 8 lb 12 oz On a diagnosis of "feeding disorder" the mother contemplated weaning the child I saw him at this time, the breast milk was more than adequate, so breast feeding was *continued, he fed eagerly* but between feeds had periodic discomfort and slight irregular vomiting The bowels now irregular, with a suppository or rectal tube a crea slightly offensive stool was obtained The abdomen prominent and through its thin wall slight distension of small intestine was visible There was no evidence of pyl stenosis, or tuberculosis or of other infective disease Du the next 10 weeks breast feeding remained adequate, vomi subsided but there was still no gain in weight The n symptom continued to be irregularity of the bowels, with s abdominal distension At the age of 4 months he was under 9 lb in weight, sleeping irregularly and passing waking hours in alternating phases of alert interest and pee discontent With no other treatment than the use o rectal tube or suppository, improvement set in in the month Bowel movements became more regular, there w steady gain in weight and complete recovery follow Throughout the illness the child remained breast fed, atten only by its mother and free from any contaminating infecti Occasional gastric lavage and a little Eumydrin were use the early weeks of the illness, but without any effect

In the past this might have been described as a cas fat-intolerance, carbohydrate dyspepsia, protein dama or abortive cœliac disease I am reasonably sure t *the fault was a neuromuscular disorder of the sm* bowel interfering with normal function but never suffici to produce obstruction or visible peristalsis In adı a single simple narrowing of the small intestine n produce a disease picture resembling sprue, there therefore grounds for assuming that a disorder peristaltic action in the bowels of an infant may cause apparent feeding disorder with wasting—indeed so cases of cœliac disease itself may be due to disturban of this nature

Another possible manifestation of neuromuscu disorder of function is to be seen in apparent respirat obstruction In some infants the obstruction appears be in the nasopharynx, in others in the bronchial tub To the observer the children give the impression t they have not yet learned to breathe normally disability may produce the deformity of pigeon ch After a few months most of them begin to recover fr their disability, those who die in the meantime fr intercurrent disease are found to have no obstruct in the respiratory tract I can find no other explanat for them than neuromuscular disorder of the respirat mechanism, and there is evidence that such disord of function are commoner in infancy than is suppos

INFECTIVE DISEASES

In a town with an infantile-mortality rate of 60 1000 live births it is probable that at least half infant deaths are due to infective or bacterial diseas With higher mortality-rates the proportion of deaths d to infection will be still greater This conclusion based on our Newcastle inquiry Most infective illnes could be prevented, and therein lies the reasonable ho that an infantile-mortality rate under 30 per 1000 l births should be attainable

In older children and adults the recognition and classi cation of infective diseases on an ætiological basis relatively easy In infants not only may the causat organism be difficult to recover but the pattern of t illness following any known infection is so variable as give little help in diagnosis A *Bacillus dysenter* Flexner infection may cause acute generalised toxæm in one infant, meningitis in another and dysentery another, two infants may be similarly infected and bo may die, yet in one the illness may have been febrile a in the other afebrile Some infective illnesses will k an infant within 24 hours, thus allowing little time f the gathering of information An organism such as t *B coli* which is relatively innocuous to older children ma cause a rapidly fatal illness in a newborn infant, and a investigating bacteriologist with fixed ideas of what a pathogenic organisms may be led astray

It is difficult to estimate the prevalence in infancy the infective diseases which can be traced to know organisms Cameron (1929) and Ogilvie (1933) hav described the dangers of sepsis neonatorum MacGreg (1939) has pointed out the prevalence of neonat pneumonia as a cause of death shortly after birth, an Craig (1936) and others have shown how the *B coli* an other coliform organisms cause meningitis in the new born Cass (1940*a*) has outlined the effects of th first started using the apparatus the time during which the intermittent pressure was applied to successive lengths of the limb was limited to four hours daily; but when we found that at any rate no harmful effects could be discerned—such as would be expected if toxic substances were being squeezed into the circulation—the compression was made continuously except during the patient's hours of sleep.

CASE-HISTORIES

CASE 2.—A girl, aged 19, had been buried under debris for 13 hours, the main pressure points being in the left groin and at the base of the left arm. She appeared very much shocked on admission with a blood-pressure of 80/60 mm. Hg. Four pints of plasma were given intravenously and this was followed by a general improvement. On the second day the blood-pressure was 115/90. Both the left arm and left leg were numb on admission and could not be moved but on the second day normal sensation had returned to the leg. Some œdema developed in the leg but this soon subsided, and the prominent local feature was an œdematous left arm with deficient sensation and movement. The general condition gradually improved until on the eleventh day (the day on which intermittent positive pressure was started) it appeared a fairly safe clinical prognosis that the patient was not going to die either of shock or of renal failure. Despite this there was evidence from the blood urea and urine that there was renal impairment (table II). The day after the application of intermittent positive pressure three changes were noted: the patient ceased complaining of thirst; the urinary output more than doubled; the limb was slightly less swollen and was much softer (this observation could readily be controlled by comparison with the deltoid area which was still hard and œdematous and to which no pressure had been applied). Intermittent positive pressure was applied to the limb for four hours daily during the subsequent fortnight until the patient was discharged from hospital. During this time the course was one of steady progress—generally, locally, and biochemically.

TABLE II—BIOCHEMICAL FINDINGS IN CASE 2

Day	Fluid intake in 24 hours	Urine †			Blood				
		Output in 24 hours	Reaction	Protein	Urea	Plasma alb. and glob.	Hb (Haldane scale)	Cholesterol	Alkali reserve
	c.cm.	c.cm.		g. %	mg. %	g. %	g. %	mg. %	c.cm. of CO₂ %
2					82				
3–7	1920	930			104	5·77	13·3 (96%)		59
8–10	2370	1160	Alk.	0·02	79	5·59	11·5 (82%)	178	60
11*									
12	3010	2530	Neut.	0·007	71	5·41	11·1 (80%)	206	59
16	2010	1980	Neut.	0·005	53				
23	2760	2295	Alk.	0·005	38	7·01	12·5 (91%)	150	61

* Intermittent positive pressure begun.
† The centrifugalised deposit contained granular and hyaline casts and red cells until the 23rd day of admission.

This patient showed the local signs of a compression injury to a limb together with some evidence of interference with kidney function. Before treatment by intermittent positive pressure was begun the urinary output was good and the patient appeared to be progressing to spontaneous recovery. Improvement seemed to be accelerated by the treatment but it cannot definitely be proved that this was more than coincidental. It can however be argued that, in this particular patient at the time when the treatment was given there was no evidence of toxic bodies being present in the damaged muscles of the affected limb, otherwise treatment by intermittent pressure would have made her worse. In view of this conclusion we thought it justifiable to apply the treatment early in the next similar case.

CASE 3.—A woman, aged 36, was admitted with a history of being buried for five hours with her right arm pinned under the beam of a house. The main line of compression was at and just above the elbow where an oblique line of superficially excoriated and deeply necrotic skin could be seen. The whole arm was swollen and hard especially about the elbow. Active movements below the elbow was absent and sensation was completely absent from the hand and almost absent from the forearm. The general condition was good. It was decided to apply intermittent positive pressure as soon as the initial biochemical observations on the blood had been made, and this was done within an hour of her admission. Compression was continuous except during sleep at night; in addition the arm was kept slung up in a position as near as possible approaching the vertical for periods as long as the patient could tolerate, to aid the return of fluid from the limb. Tables III and IV give the biochemical studies and variations in measurements of the limb. The general condition of the patient remained good, the urinary output was normal, the blood urea remained within normal limits and fell, and the arm, after a period of increased swelling during the first 24 hours, became softer and smaller. The measurements became normal first at the wrist and shoulder and by the end of the second week the whole arm had returned to normal size and consistency except for a local area of inflammatory induration around the zone of sloughed skin at the elbow, corresponding to the line of original pressure.

TABLE III—BIOCHEMICAL FINDINGS IN CASE 3

Day	Fluid intake in 24 hours	Urine †			Blood				
		Output in 24 hours	Reaction	Protein	Urea	Plasma alb. and glob.	Hb (Haldane scale)	Cholesterol	Alkali reserve
	c.cm.	c.cm.		g. %	mg. %	g. %	g. %	mg. %	c.cm. of CO₂ %
1	1650	280	Sl. acid	0·015	28	6·5	13·9 (101%)	162	61
2	1410	2160	neut.	0·007	19	6·4	15·5 (111%)	178	65
5	2850	2220	neut.	<0·005	19	7·3		158	65
9	3450	2455	alk.	<0·005	28				
15		2200	neut.	<0·005	18	7·0	14·5 (105%)	171	66

† The centrifugalised deposit contained red cells for the first two days of admission only.

This patient treated from the beginning by intermittent positive pressure developed no evidence of shock and no evidence either clinical or biochemical of impairment of renal function except for the presence of red cells in the urinary deposit for 48 hours after admission. An obvious possible explanation is that she would not have developed these complications in any case; but on the other hand we have seen patients develop the full syndrome and die with no worse local signs than this patient originally presented. The local condition of the arm was certainly more serious than that of the first case in which there was chemical evidence of impaired renal function. The possibility cannot lightly be dismissed that the favourable course was related to treatment.

TABLE IV—LIMB CIRCUMFERENCES IN INCHES IN CASE 3

—	Day					
	1	2	4	7	11	15
Wrist	7¾	7	6¾	6½ (normal)	Normal	Normal
Forearm	13	12½	12	11	10½	10¾ (normal = 9¾)
Arm	14	13½	12	11¾	11½	11 (normal)

"Normal" refers to corresponding measurement of other arm.

DISCUSSION

Treatment by compression was based on the conception that the crush syndrome might be caused by the large leakage of blood constituents into a limb suddenly decompressed, the capillaries of which had temporarily lost their function through an impaired blood-supply during the compression. The constant mechanical massage of the injured tissues by compression treatment produced no ill effects—an argument against the presence of a toxic factor. It was accompanied by a greatly increased output of urine; first a softening then the which later live a harmless saprophytic life in selected tissues of the adult body The infant may have to pass through a stage of adjustment after primary infection with each of these organisms, and the primary infection may take place without evident clinical disease arising, or it may take place in a manner and at an age when the response will be different from that provoked by reinfection in later life We may have to study the primary or infantile forms of all infections, just as we have studied the illnesses produced by primary infection with tuberculosis This branch of clinical medicine offers unusual opportunities for research and discovery So far in England this work has been done mainly by amateurs—using the word in the sense of those who do something for the love of it But now the importance of the subject demands that those with suitable talent and training shall be selected to do the work in places suitable for research. The training implies a clinical experience of pædiatrics The places imply a staff and equipment which will ensure the safe custody of young infants

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COMPRESSION TREATMENT OF CRUSH INJURIES OF LIMBS

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BOMBING of civilian areas has led to the recognition of a syndrome having the following course the patient has a history of being buried for several hours under the debris of a bombed house with compression of a limb or limbs, on admission to hospital his condition may be good, with normal pulse and blood-pressure, but a few hours later shock sets in, locally, œdema appears over and around the compressed area and spreads along the limb or limbs, movement of the affected limbs may be limited or absent and there may be various sensory disturbances such as anæsthesia, hyperæsthesia or paræsthesia, oliguria and other signs of renal failure develop, the termination is usually fatal, with rising blood nitrogen and anuria The following case illustrates these points

CASE 1 —A woman, aged 23, was admitted to hospital after having been buried in her bed for 16 hours under the debris of a bombed house The pressure had been chiefly on the right shoulder and right knee, particularly the latter On admission her general condition was good, the pulse rate being 80 and the blood pressure 105/80 mm Hg A few hours later the general condition deteriorated, and 6 hours after admission she was so collapsed that the blood pressure could not be determined Before this extreme collapse treatment by intravenous plasma and serum had already been begun, and after several pints had been given there was gradual improvement Locally swelling appeared round the point of pressure at the right shoulder which spread towards the upper arm and the adjacent areas of the trunk, the patient was unable to move the arm at the shoulder but movements and sensations were normal from the elbow downwards The whole of the right leg became œdematous, and all movements and sensations were absent from the knee downwards After recovery from the phase of extreme shock, the small urinary output caused anxiety, in successive twenty four hour periods this only amounted to 5, 4, and 4 oz with anuria on the fourth and fifth days, despite successive daily intakes of fluids by all routes of 218, 188, 102, 137, and 18 oz The patient became more and more confused mentally, finally comatose, and died on the fifth day

TABLE I—BIOCHEMICAL FINDINGS IN CASE 1

Day	Fluid intake		Urine output in 24 hours	Blood						
	Total	By vein		Urea	Non-protein nitrogen	Plasma alb	Plasma glob	Hb (Haldane scale)	Serum potass	Alkali reserve
	c cm	c cm	c cm	mg %	mg %	g %	g %	g %	mg %	c cm of CO₂ %
1	7440	3000	150							
2	5640	1800	120	137	87				25	
3	3060	Nil	120							
4	4110	1800	0	188	122	2 89	3 08			
5*	640	Nil	0	300	196			10 7 (78%)	32	21

* Day of death

The main biochemical features were the passage of small amounts of highly blood-stained alkaline urine containing about 1% of protein, and nitrogen retention, depleted plasma proteins and lowered alkali reserve in the blood (table I) Similar cases have been reported by Bywaters and Beall (1941), Beall et al (1941), Mayon-White and Solandt (1941) and the Medical Research Council (1941)

THEORIES OF THE CAUSE OF RENAL FAILURE

The mechanism of the renal failure is obscure The most favoured conception is that toxic bodies are produced in the compressed and damaged muscles, and that these, on release of the compression, pass into the circulation and eventually damage the kidneys by chemical or physical action On this hypothesis one or all of the following measures have been adopted from time to time amputation of the affected limb to remove the source of the toxins, intravenous therapy designed to dilute the toxin and promote diuresis, administration of suprarenal cortical hormones to raise the blood sodium, and so to counterbalance the raised blood potassium, measures directed towards dealing with the kidney lesion Progress has been made on these lines which we shall not discuss here

It occurred to us, however, that the syndrome might be due, not to toxic bodies liberated from damaged muscles, but to a loss of substances from the circulation into the damaged limb The development of the shock phase of the syndrome could readily be explained by this conception, but the renal failure phase is not so readily explained, unless it be considered a secondary manifestation of the shock phase Arguing on these lines it appeared to us that large intravenous injections of plasma or crystalloids before or during the shock phase would tend primarily to increase the loss of blood constituents into the damaged limb, with subsequent promotion of traumatic œdema A new therapeutic approach to this problem, it seemed, would be to prevent as far as possible the leakage of fluid from the circulation to the injured limb, and to restore to the circulation of such fluids as had already leaked out It was considered that a form of intermittent pressure to the damaged limb would best aid the return of tissue fluid to the circulation and several methods were tried out

We thought that the Pavaex apparatus as used for organic vascular disease might be so adjusted as to apply intermittent positive pressure to the œdematous limb, but the glass sheath used to enclose the limb proved unsatisfactory in practice Eventually the Pavaex motor was connected to an ordinary blood-pressure apparatus More recently we have had made for us[1] a blood-pressure cuff of twice the normal size, so that a greater length of limb can be compressed at one time The cuff is bandaged on to the limb, with a layer of cotton-wool underneath if necessary, and connected by means of a T piece with the mercury manometer and with the Pavaex motor With the machine at our disposal the maximum positive pressure obtainable was 50–60 mm Hg, and we thought this as high a positive pressure as was desirable When the motor was turned on the cuff becomes inflated to this pressure and then deflated, the rate of cycle being varied as convenient When we day she micturated about every 2 hours and 3–4 times every night She was a plump healthy looking woman weighing 13 st Blood pressure 128/80, pulse-rate 80, temperature 98° F There was no exophthalmos or palpable tumour elsewhere than in the jaw, and no cutaneous xanthomata The throat and ears were normal and there were no physical signs of disease in the chest, abdomen or central nervous system

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[1] By Messrs Down Bros

The daily output of urine, measured over a period of a week in hospital, averaged 13 pints in 24 hours, specific gravity, 1010, no casts, sugar, albumin or other abnormal constituents Blood-count red cells 4,680,000, Hb 92%, colour index 0 98, white cells 5600 (polymorphs 63%, lymphocytes 31%, mononuclears 6%) Serum calcium 9 2 mg per 100 c cm, plasma phosphorus 3 5 mg per 100 c cm, blood cholesterol 120 mg per 100 c cm Wassermann reaction negative A stool showed no excess of fatty acids or saponified residue Cholecystogram was normal

A radiogram of the skull did not show the typical map-like (Landkartartige) appearance described by Schuller (1915) Only one clear cut defect, the size of a sixpence, with some what irregular edges was seen in the centre of the frontal bone (fig. 2) No surrounding new bone formation was present The remainder of the skull, including the orbit and pituitary fossa, was normal Extensive defects were seen in the left side of the mandible, and several smaller lesions in the horizontal ramus of the right side The lower end of the left femur was also affected, but the lesion differed from those seen in the skull and mandible (fig 3) Instead of clean-cut defects, the appearance resembled chronic osteomyelitis, except that periosteal reaction was somewhat less severe and there was no sequestration. The lower end of the bone was expanded with slight periosteal reaction and the cortex and medulla were replaced by irregular patches of rarefaction surrounded by sclerosis A similar but smaller lesion was seen in the diaphyseal region of the left tibia Radiograms were taken of all the other bones of the skeleton, but no further abnormalities were found

A course of X-ray therapy was given to the pituitary region and to the local deposits in the skull, the left femur and left tibia

Technique of treatment given—Kilovoltage 190, filter, Thoræus, equivalent to 1 5 mm copper, milliamperage 6 Anticathode skin distance 30 cm Portal of entry for mandible 10 × 8 cm, dosage 2250 r spread over 5 weeks Portal of entry for femur 10 × 15 cm., dosage 2200 r spread over 5 weeks Portals of entry for pituitary, 4 fields 6 × 8 cm, dosage (spread over 3 weeks) right lateral field 1200 r, left lateral field 1200 r, vertex field 1200 r, anterior field 1200 r

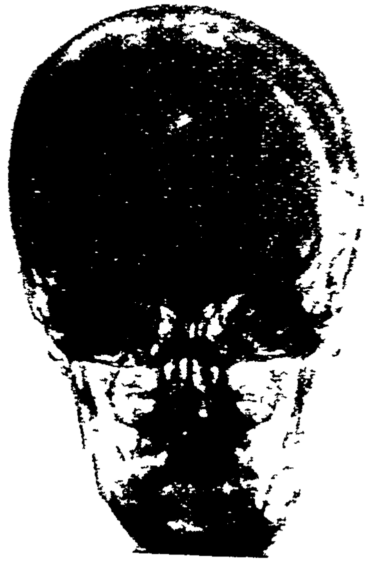

FIG 2—Radiogram of skull before radiotherapy showing one clear-cut defect with somewhat irregular edges in centre of the frontal bone and extensive defects in left side of mandible

The patient has been seen at short intervals for a year since the conclusion of the treatment and radiograms of the chief bones of the body have been taken from time to time As was expected, the treatment had no effect on the diabetes insipidus, the damage to the tuber cinereum presumably being irreparable, the patient continues to pass an average of 12–13 pints in the 24 hours It was proposed to give her pituitrin treatment for this, but she prefers to put up with a disability to which she is now accustomed

As in the cases recorded by Gilmore (1925), Cignolini (1929), Vampre (1930), Schüller and Chiara (1930), Rothnem (1930), and Sosman (1932), our case proved radiosensitive as far as the local deposits were concerned The relief of pain in the jaw and in the knee was rapid Two weeks after the beginning of treatment the pain was already eased, and by the end of the treatment had disappeared The repair of the bone, however, as shown by the X rays, was slow It was 3 months after treatment that the first change in the lesions in the skull and the mandible was noted A slight clouding of the centre of the defect with the healing of the edges then appeared, but the defects were not completely filled in for a further 5 months The lesion in the femur showed an even slower response anatomically, the only evidence at the end of 8 months being a faint opacity in the previously rarefied areas (Unfortunately no further radiograms of the femur could be taken to follow the healing of the lesion, because the patient left London on account of the war) The slow anatomical response in adults has already been stressed by Sosman He states that the amount of repair effected in 3 months in children's bones takes at least 16 months in adults This slow response was also noted by Kellogg (1940) in his report of a case of a man aged 29, who received radiotherapy to multiple defects in the skull, 18 months elapsed before the involved areas were completely filled in. So far, in our patient, no fresh deposits have been observed

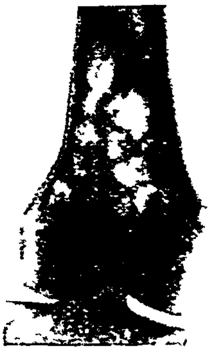

FIG 3—Lesion in lower end of left femur

DISCUSSION

Although this patient had been treated for many years for diabetes insipidus, owing to her age and the absence of exophthalmos or obvious bone tumours, the true ætiology of the condition had never apparently been considered The disease in her case appears to have arisen much later in life than usual, and to have pursued a chronic course without danger to life It is probable that her gingivitis was due to the disease in the jaws, and it is clear from the response to radiotherapy that the long-standing pain in the left knee also was caused by the lesions in the femur and tibia We have found no report of repeated miscarriage due to xanthomatosis, but in the absence of any other obvious cause it is possible that this too was a manifestation of her disease

Sufficient cases have now been reported to show that the Schüller-Christian type of xanthomatosis of bones may occur in adults (Schüller and Chiari 1930, Sophian 1930, Sosman 1932, Kartagener and Fischer 1932, Davison 1933, and Snapper 1938), though it is difficult to be certain whether the disease has arisen late in life or persisted in a latent form from childhood In some of these cases it has certainly pursued a benign and unobtrusive course, and the diagnosis has been unsuspected for many years, one of Sosman's cases was a man of 55 years with 15 years' history of diabetes insipidus We have also recently observed an adult case in another hospital in which the diagnosis was only made after biopsy of a long-standing lesion in one of the long bones

The radiological changes in the long bones in the case under discussion did not resemble the usual description of the changes in the membrane bones of the skull, though the appearance of the lesions in the jaw and the frontal bone was characteristic being clear-cut punched out circular defects without any surrounding bone reaction, the long-bone changes resembled the appearance of chronic osteomyelitis without sequestration, and showed a well-marked bony reaction Hofer (1930) and Slauck and Donalies (1930) have also observed increased density of the bone in the vicinity of lesions in the long bones, and Chester (1930) recorded 2 cases of patients with xanthelasma of the eyelids associated with lipoid granulomatous infiltration of the long bones, causing a dense osteoplastic reaction In other cases the bony reaction has been less marked, and the appearance has been that of osteitis fibrosa cystica (Heard, Schumacher and Gordon 1926, Snapper 1938, and Sophian 1930)

In the anomalous forms of the disease, radiographic interpretation may be difficult, and metabolic tests, such as that for hypercholesterolæmia, are not always positive —as in this case It therefore seems that the best method of confirming the diagnosis is by biopsy Snapper (1938) has emphasised that this must be carried gradual disappearance of the local œdema, a fall in blood-urea or the maintenance of blood-urea within normal limits, symptomatic improvement In the course of the investigations it was noted that the reaction of the urine was either alkaline or neutral, rather than acid The alkalinity of the urine would possibly explain the absence of casts in the urine of the fatal case described, and the small number in case 2

Comparable to compression injuries of limbs is the cycle of events which follow the release of a tourniquet, this too may produce a fall in blood-pressure and the appearance of shock, the explanation usually accepted being that various toxic metabolites are swept out of the temporarily occluded limb into the general circulation The application of a tourniquet however also produces temporary anæmia of the occluded limb with injury to capillaries and local dilatation of all vessels, and the release of the constriction would be followed by a sudden loss of blood constituents into the injured limb It is suggested that a similar line of treatment to that described here might be applied to patients who through error have had a tourniquet applied for too long a period

SUMMARY

Crush injuries are often followed by a syndrome in which shock is associated with spreading œdema of the affected limb, oliguria or anuria, and generally death It is usually held that this syndrome is due to the liberation of toxic bodies from the crushed tissues into the general circulation

We suggest that the reverse may be true, and that on the release of pressure there is a loss of blood constituents into the injured limb

On this hypothesis we have treated two cases by applying intermittent positive pressure up to 60 mm Hg to the œdematous area, using a special large blood-pressure cuff and a Pavaex motor

With this treatment there was in both cases a greatly increased output of urine, softening and later disappearance of œdema, a fall in blood-urea to within normal limits, and recovery

We suggest that this treatment should be given further trial in crush injuries and in cases where tourniquets have inadvertently been left too long in position

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XANTHOMATOSIS OF THE SKELETON IN AN ADULT

(LIPOIDOSIS OF THE SCHULLER-CHRISTIAN TYPE)

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XANTHOMATOSIS of bones was first described in the form of a clinical syndrome, characterised by the combination of multiple defects in the membrane bones of the skull, exophthalmos, and diabetes insipidus, it has since been known as the Schuller-Christian syndrome All the cases described by Fraser (1935) were infants or young children, and Horsfall and Smith (1935) found that in half of the 36 published cases which they analysed the symptoms arose before the age of 2 years The disease is generally believed to pursue a downhill course (Sosman 1932) and few cases have been described which have reached adult life untreated

Our knowledge of the ætiology of the disease is chiefly due to Rowland (1928), who showed it to be one of a group of closely allied disorders of lipoid metabolism, to which he gave the name xanthomatosis Under this heading are also included Niemann-Pick's disease (characterised by hepatomegaly and splenomegaly in Jewish children), Gaucher's disease (a familial disease of children chiefly affecting the spleen), and certain cutaneous xanthomata Epstein and Lorenz (1930) have further clarified these diseases by the demonstration of the fundamental metabolic disorder in each, a disturbance of the metabolism of cholesterol and its esters in the Schuller-Christian type, of the phosphatides in Niemann-Pick's disease, and of kerasin in Gaucher's disease

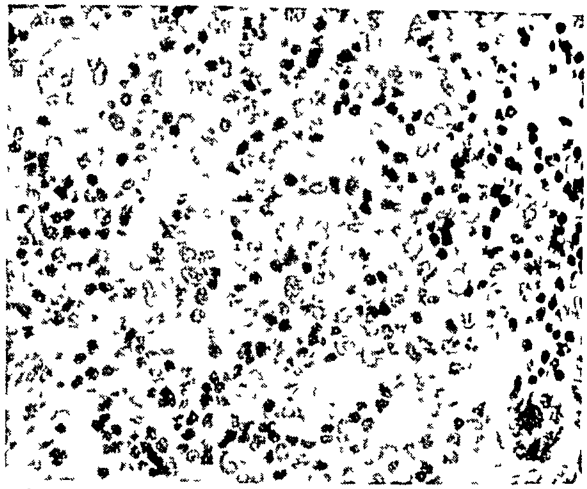

FIG 1—Microscopic appearance of lipoid granuloma in jaw (×360 H and E)

Perusal of the recorded cases of the Schuller-Christian type of xanthomatosis makes it evident that the original clinical triad is not always present Snapper (1938) has recently described 3 cases in which none of these symptoms were found, the lesions being present chiefly in the long bones Other inconstant features of the disease which have been described are dwarfism, adiposogenital dystrophy, jaundice, and gingivitis, but it is clear that there is no constant symptomatology It seems probable that many cases have hitherto passed unnoticed owing to the failure to recognise this variable symptomatology, and the fact that the disease may occur in adults as well as infants The following case is one which had been missed for 16 years for these reasons

CASE HISTORY

A housewife, aged 37, was admitted to hospital complaining of an aching pain in the left lower jaw There was an ill defined swelling of the left horizontal ramus of the mandible, extending forward from the region of the angle for a distance of 1½ in, which was hard and slightly tender, the gums were edentulous The jaw was explored for a dental cyst, but a solid tumour was encountered and a biopsy was therefore performed The section (fig 1) showed granulation tissue and fibrous tissue, in which were scattered many large giant cells of the foreign-body type, some with foamy cytoplasm in which globules of fat could be demonstrated by staining with Sudan III There were numerous eosinophil cells, sometimes collected together in groups to form little islets in the granulation tissue, as well as plasma cells, lymphocytes and histiocytes, but few polymorphonuclear leucocytes The diagnosis of lipoid granuloma was made and the case investigated further

There was no relevant family history She had been perfectly normal until the age of 21, when 6 months after her marriage she began to complain of thirst and frequency of micturition, She was investigated at another hospital, told that she was suffering from "water diabetes," and given a course of Pituitrin treatment, which improved matters for a time Later she ceased to attend the hospital and the treatment lapsed Her periods started at the age of 12 and have remained normal, lasting about 3 days every month At the age of 23 she gave birth to a stillborn child and subsequently had two further miscarriages, 2 and 5 years later, 3 years ago she became pregnant again, and this time a normal child was born shortly before term, by cæsarean section, following an antepartum hæmorrhage During this pregnancy she was again treated with pituitrin For several years she had complained of chronic pain in the left knee which she had attributed to rheumatism, and two years ago she had had all her teeth removed for severe gingivitis At the time of investigation she was in the habit of drinking 2 glasses of water between each meal and several glasses with her meals During the

A CASE OF HYSTERIA

THEORY AND PRACTICE IN THE TWO WARS*

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Good fortune sometimes sends us a case which aptly illustrates some view of illness we are interested in , occasionally we find one which enables us to make a brief historical review of our theories Such is the case of a soldier of 28 who received superficial gunshot wounds of the right arm and leg on active service and thus incommoded made his way to the coast during the retreat wandering about for five days unable to get treatment After a few weeks in hospital he recovered from his wounds and went on sick-leave On returning to his depot he developed a glove anæsthesia in the arm below the wound and hysterical paralysis This condition continued for many months during which he was morose and dejected When seen he had an evasive manner and spoke in clipped speech with " Yes, sir — No, sir —I ll answer any question you put, sir " volunteering no information

Viewed in terms of the last war's psychopathology we would say that there was a break in the representation of the limb as an active thing in the mind because, in the struggle between the impulse to duty and that of self-preservation (the fear of injury or of extinction in active service) self-preservation had won · he had no occasion to experience the fear while protected by his hysterical paralysis Though it came on after leave and on return to duty, he was unaware of the relevance of this factor in its causation because—the symptom having solved it—he was now unconscious of the conflict in his mind That he was an unstable fellow lends suppport to the view that the dissociative mechanism of escape from conflict is often found in those with some hereditary degeneration ; his evasive manner might be ascribed to a psychopathic disposition due to the same cause The fact that he had seen active service in the Far East and only broke under the strain of the battle in Flanders also shows that even trained regulars can be pounded into dissociation if the threat to life be severe enough Treatment would have followed within the framework of reference of the psychopathology Since rest massage and electricity had failed his esprit de corps would have been stimulated his sense of shame touched on under hypnosis he might have been shown the limb in movement so that that break in the representation in the higher centres would have been bridged It would be possible to extend the theoretical exposition with other views and evidence This man of marriageable years roved through life single refusing promotion so as to keep the equal camaraderie of his friends unspoiled by differences of rank But self-love heightened by danger and stimulated by the injury, awakened fears of other injuries and threats from the infantile past and pulled him away even from loyal companionship Regression once begun, ended in the focusing of all attention on the flaccid limb " It is all I can think about " he said It would not be discordant to common knowledge among psychopathologists to see in the helpless right arm both a symbol and a visitation of punishment He is impotent to defend himself , guilt now contributes to the maintenance of the symptom since with it he must leave his companions, just as a sense of guilt must have contributed to its origin when he failed them on return to duty And further by being thus incapacitated he stays in England The regressive pull to home and security would tend to keep him ill " for the duration "

Viewed clinically yet other considerations presented themselves It was observed that he nursed his arm, it was all he could think about, he stroked it and tried to make it warm (it was blue and cold) The clinical handling of the case was guided by the simplest of all rules in psychology but one that is commonly neglected —that when anyone just lets himself talk at random whatever two things are mentioned (or even indicated by gesture) in close temporal association have also a common link in meaning to the patient It was soon clear, when he was got to talk, that the " poor arm " represented in his thoughts a person who was dead, and one for whom he would have given his right hand—his best companion in the dreary first winter of the war for whose sake he had refused promotion He mourned his friend, who was killed in the action which also wounded him and he nursed his own damaged self at one and the same time When those two dreadful events happened his feelings for his friend were numbed he paused a moment by his side (or he did desert him at the end ? He could not bear to think of those times) and betook himself to the coast When on the basis of his own associations it was pointed out to him that his mourning was being carried out within himself in the much nursed dead arm he became resentful and said flatly that it was the doctor's idea and not his own The point was not argued since the links between two contiguous ideas are not necessarily conscious and one cannot argue in any hope of a fruitful outcome with forces hidden by an active defence from the patient's own consciousness , but he was persuaded to speak often of his friend and it was remarkable how his arm and his friend were linked in the associations of his mind And as he thus spoke he began to tremble and showed signs of grief and need for sympathy, a contrast to his earlier suspicious and impervious politeness No new memory was obtained no removal of amnesia, only—but that was much—an increase in feeling For a week or two he remained depressed and then took up his military interests again His pleasure in small-arms drill, its briskness those resounding right-hand slaps on the butt of his good rifle proved a stimulus to recovery In the hospital there was a system of " para-military training " in which military exercises the equivalent, for soldier patients of occupational therapy, were blended with psychiatric testing of the patient's response to situations calling for various degrees of quickness, assertiveness, exertion and discipline Under these conditions his improvement as a soldier could be watched with the same care as his progress as a patient

He had opportunity to resume his military interests from the moment he entered the hospital but he did not do so until his mind was partly unburdened of its load of grief He was shown no sympathy beyond that common to the professional relationship of doctor to patient The change which occurred was not due to the mere provision of military drill or to any endeavour to win him over to better moral , such effort as was expended (adding all the interviews together they amounted to about an hour), was directed—following the lead given unwittingly by his own words and gestures —to disclosing to him the thoughts and feelings that were hidden in his mind When a connexion was made between his past experiences and his present existence, when he was enabled to bear the burden of his mental sufferings and see them in the context of his still developing emotional life then and not till then could he resume interest in his environment, look into the future, become accessible to the feeling of pride in military accomplishment, and make friendly contact with his fellows on equal terms

It will be remembered that he quickly recovered from his physical injury and fell ill of his hysterical paralysis on return to his depot Here the sight of familiar faces awakened in his mind the memory of those he had lost in battle Perhaps the disturbance and dissociation came not so much from the fear of injury but from the tension of mind due to this unassimilated experience of death though it was not his first bereavement When he had begun to adjust his feelings to the loss of a loved person his soldiering could be resumed, and he could face danger to himself and valued friends again

THEN AND NOW

The contrast in psychiatric theory between the two wars rests principally in the views taken of the emotional aspect of the patient's mental life In the last war the important consideration was the conflict of instincts those of self-preservation versus those of the herd (social attitude and duty to others) There is almost no mention of grief, mourning and depression in the psychiatric literature of the last war In this war attention is directed to the kind of emotional bond existing in the out on a recent lesion, in order to demonstrate satisfactorily the lipoid granuloma

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* Read at a meeting of the medical section of the British Psychological Society at Nottingham on April 19

In view of the diabetes insipidus in this case, the true nature of which had been unsuspected for so long, we investigated afresh 3 other patients with idiopathic diabetes insipidus who were attending the outpatient department In none of these was there any evidence of xanthomatosis in radiograms of the entire skeleton

SUMMARY

A case of xanthomatosis of the skeleton (lipoidosis of the Schuller-Christian type) is described in a woman of 37, who had been found 16 years before to have diabetes insipidus, the cause of which was not suspected until she developed a tumour of the jaw The diagnosis was made by biopsy of this recent lesion in the mandible

There was no exophthalmos, and only one defect was found in the bones of the cranial vault She had suffered from severe gingivitis and repeated miscarriage, and it is possible that both these disorders were caused by the disease

The lesions in the mandible and the frontal bone produced clear-cut defects in the radiograms, and healed readily with X-ray therapy, those in the long bones were more diffuse, gave rise to an osteoplastic reaction, and a year after treatment have shown a response to treatment which is still very slight The diabetes insipidus was unaffected by radiotherapy to the pituitary fossa

Xanthomatosis of the skeleton may occur in an adult form and without any of the clinical signs of the Schuller-Christian syndrome The anomalous forms in which the long bones are affected are difficult to diagnose unless biopsy is carried out and the lipoid granuloma demonstrated For these reasons many such cases may be missed

We are indebted to Mr E K Martin, M S, for permission to investigate and record this case

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A PELVIC HYDATID CYST

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In view of the rarity of hydatid disease in this country the following case seems to merit publication

A married woman, aged 28, came to the outpatient department of the City General Hospital, Sheffield, in July, 1939, complaining of dragging pain in both iliac fossæ, dating from the birth of her second child two years previously, incontinence of urine on straining, occasional dysuria and a feeling as if "something were coming down" There was no dyspareunia and no intermenstrual discharge The menses were regular every 28 days with scanty loss over two or three days Since December, 1938, however, the loss had been more profuse There was no dysmenorrhœa Both her confinements had been normal, the elder child being aged six Her health in the past had always been good

Abdominal examination revealed a midline cystic swelling just appearing above the symphysis pubis On vaginal examination there was no prolapse of the vaginal walls, and the cervix was healthy The uterus was thought to be small and retroverted, or at least pushed backwards by a midline cystic swelling about the size of a grape fruit Neither ovary could be felt A provisional diagnosis of ovarian cyst was made An Aschheim Zondek test was negative, but the hormone content of the urine was slightly higher than is usually found in the non-pregnant condition

On Aug 1, 1939, under ether anæsthesia, a further examination was made The uterus was now definitely made out to be of normal size and to be pushed backwards The left ovary was easily palpable but the right could not be felt The cystic swelling, midline in situation, was only movable within limits It was soft in consistency and yielded a peculiar type of fluid thrill In light of the findings it was thought that the cyst was growing from the right ovary Laparotomy was now carried out through a midline subumbilical incision The cyst was covered by adherent omentum On separating the adhesions it was found that the uterus, ovaries, tubes and broad ligaments were all normal, the cyst appeared to be growing from the extraperitoneal tissue at the apex of the bladder As the process of separating adhesions continued, an opening was made into a kind of capsule, through which an inner cyst slipped out into the pouch of Douglas In appearance this cyst was not unlike a soft jelly-fish It was removed from the pelvis without rupture The outer capsule, through which the cyst had been extruded, was stripped off completely without difficulty, and it was then seen that the remains of still another capsule persisted The greater portion of this was excised but a small piece at the apex of the bladder was left in situ after ligation Previously, careful searching with a probe had failed to demonstrate any opening into the bladder Before closing the abdomen the liver and other abdominal viscera were carefully palpated, but no abnormalities could be detected The abdomen was closed in layers without drainage

The structure removed consisted of a cyst and a complete but separated capsule, which on microscopic examination presented the typical appearance of the ectocyst of a hydatid cyst The cyst itself contained clear fluid, with the following features sp gr 1018, protein 0 05 g per 100 c cm, uric acid 3 5 mg per 100 c cm, sugar 0 08 g per 100 c cm, succinic acid present A wet film showed the presence of fat droplets, cellular debris and the typical hooklets of *Tænia echinococcus* On the day after operation the white cell count was 15,000 per c mm (polymorphs 75%, eosinophils 2%)

Convalescence was uneventful and the patient left hospital well on Aug 23 A radiogram of the chest taken before her discharge showed no abnormality

Primary hydatid cysts in the pelvis are so rare that one hesitates to claim that this was one, in spite of the absence of gross signs in the abdomen or chest When seen a month or two after operation, the patient was in good health, but no reply has been received to a more recent inquiry

We are all taught to remember hydatids when faced with cysts in the pelvis, but only when signs of the disease are present elsewhere is a correct preoperative diagnosis likely to be made An interesting feature of this case, noted during the examination under anæsthesia but not appreciated until later, was a peculiar, soft, fluctuant thrill imparted to the hands during the bimanual examination No doubt this was the "hydatid fremitus" described in textbooks

I am indebted to Dr James Clark, medical superintendent of the City General Hospital, Sheffield, for permission to publish this case, to Dr W J Clancy, deputy superintendent, for his advice, and to Dr Hugo Droller and Dr H E Harding for the pathological findings

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Fire without Smoke —Some day dreams are nostalgic and begin like fairy stories "Once upon a time ", others are courageous and begin "after the war " The Smoke Abatement Society are among those who are going in for planned dreaming The spring issue of *Smokeless Air* contains the immediate statement of their views on smoke abatement in relation to reconstruction and development, and this interim memorandum has already been submitted to Lord Reith, minister of works and building, and Mr Arthur Greenwood, minister without portfolio "Business" smoke, industrial smoke, and domestic smoke, the society affirm, may all be reduced, and in the near future we shall be offered an opportunity to abolish them

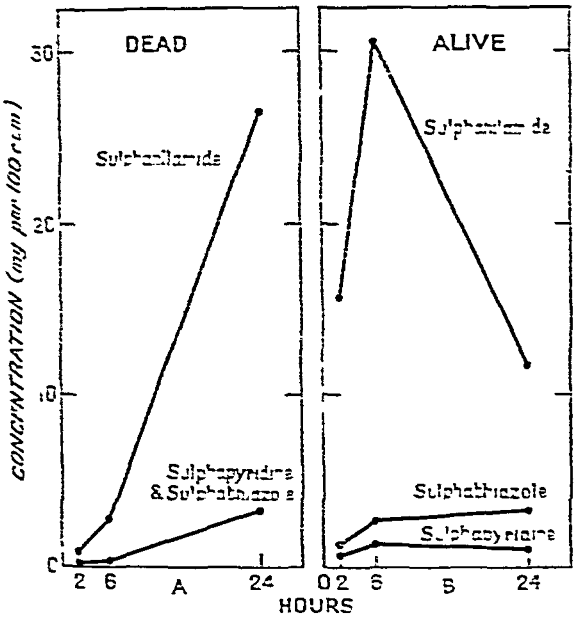

Fig. 2—Concentration of sulphonamide outside the abdominal wall overlying an intraperitoneal deposit of the compound A When the abdominal wall is dead B When the abdominal wall is alive with an active circulation

the five compounds The diminution of concentration at 24 hours will be due to the absorption into the general circulation and excretion

A chance occurred to make similar observations on a human wound in which there was a long suppurating sinus under the skin, with two openings to the surface about 15 cm apart The upper one was packed with plain gauze and the lower one with gauze impregnated with sulphathiazole. 24 hours later the pus on the upper piece of gauze contained sulphathiazole 6 3 mg per 100 ml

CONCENTRATION IN TISSUES AROUND A WOUND

To study the concentration in the tissues around a wound a swab impregnated with sulphonamide was placed in the peritoneal cavity against the lateral abdominal wall the cavity being approached under full anæsthesia through a midline incision. A second incision was made in the skin of the back and a swab for sampling was pushed round under the skin so as to lie outside the abdominal wall just over the swab with the sulphonamide. In the animal used the rat the thickness of tissue between these two swabs was 2–3 mm The openings of the two wounds were much too far apart for any direct leakage to occur from one to the other A third swab was placed under the skin of the shoulder to act as control and to sample the level of sulphonamide in the body as a whole. All wounds were closely sutured The swabs were moistened with Locke s solution as before The intraperitoneal swabs contained 0 3 g of the compound (in the live series the quantity of sulphapyridine or of sulphathiazole was 0 4 g) After various periods the animals were killed the wounds were reopened the swabs were removed and the concentration of sulphonamide in the second and third swabs was estimated.

When the experiment was performed on dead animals to test the diffusion of the compounds across a sheet of tissue without circulation the results obtained are as shown in fig 2 which gives the concentration of compound in the extra-abdominal swabs (average of 3 experiments), the concentration in the control swabs being negligible These concentrations show the amount of compound which had diffused from the surface of the intraperitoneal swab through a sheet of tissue approximately 6 sq cm in area and 2–3 mm thick and into the extra abdominal swab which usually contained about 2 c cm of fluid It is seen that during the first six hours the amount which had diffused across was small but after 24 hours the concentration of sulphanilamide outside the abdominal wall was 26 mg per 100 ml while that of sulphapyridine and sulphathiazole was slightly over 3 mg per 100 ml the curves for these two compounds being practically identical Apparently the penetration of sulphonamide compounds into dead tissue is slow, especially in the case of sulphapyridine and sulphathiazole.

When the same experiment was performed on live animals so that the diffusion occurred across an abdominal wall with an active circulation the results were quite different. In these animals the concentration in the extra-abdominal swab was never appreciably greater than it was in the control swab Table II shows the results obtained with sulphanilamide; with sulphapyridine and sulphathiazole there was the same equality between the sample and the control swabs In a previous paper (Hawking 1941) figures were quoted to show that sulphanilamide does not diffuse locally from a wound in rabbit muscle for more than 1–2 cm The present experiments using more effective methods to prevent leakage along fascial planes indicate that the distance penetrated by local diffusion is not more than 2–3 mm Presumably when the compound begins to diffuse through living tissue, it soon meets a blood capillary and is swept away into the general circulation The concentration occurring in the extra-abdominal swabs for the three compounds at the various times are shown in fig 2B, these concentrations represent the level in the body as a whole. Comparison with fig 2A shows that tissue with an active circulation can usually be reached by the compound much more rapidly via the general blood-stream than it can by diffusion from an adjacent deposit.

TABLE II—CONCENTRATION OF SULPHANILAMIDE OUTSIDE THE ABDOMINAL WALL OVERLYING AN INTRAPERITONEAL DEPOSIT OF SULPHANILAMIDE, COMPARED WITH THE CONCENTRATION IN A CONTROL SITE ELSEWHERE

Time (hr)	Concentration * (mg per 100 ml)	
	Outside abdominal wall	Control
2	15 7	19 8
6	31 6	30 2
24	11 7	13 4

* Figures are the averages of 3 experiments

DISCUSSION

The results indicate that sulphanilamide will travel quickly from one part of a wound cavity to another and that it will diffuse slowly through dead tissue but that its local penetration into tissue with an active circulation does not extend more than two or three millimetres The other compounds studied produce lower concentrations in the distal parts of a wound the order of diminution being sulphathiazole, sulphanilylguanidine sulphadiazine and sulphapyridine. Both sulphathiazole and sulphapyridine diffuse through dead tissue only at a slow rate, and both resemble sulphanilamide in their restricted penetration into tissue with an intact circulation

The practical conclusions to be drawn from this work as regards the insertion of these compounds into wounds are (1) that sulphanilamide will probably travel from the central cavity of the wound down into the crevices, although it will be advisable when dressing the wound to distribute the drug into all the prolongations of the wound as thoroughly as is surgically possible (2) that sulphanilamide will slowly penetrate into fragments of dead tissue lying in the wound and will reach the germs there (3) that by local action it will not penetrate far into tissue with intact circulation such tissue being reached more quickly and more effectively by oral or intravenous administration.

When considering which is the best compound to use, sulphanilamide has the advantages of cheapness of high local concentration (maximum about 1500 mg per 100 ml) and of greater powers of penetration and diffusibility, but the disadvantages of rapid disappearance from the wound and of lower bacteriostatic activity against many of the organisms which may be present Sulphathiazole persists for a longer period in the wound and its bacteriostatic activity is much higher than that of patient's mind to objects (people) in whom he is interested, and to those representations of instinct (which we call phantasies) in the more primitive, but none the less important, levels of the mind which are not conscious We do not see the conflict in abstract terms of instinct but in terms of concrete object relationships, historically determined for each individual by his past experiences, including his phantasies These experiences affect his capacity to adjust himself to the changing conditions of his present life The case quoted illustrates only one of the many aspects and causes of mental illness in war, and so may seem to over-emphasise it

There is also a contrast in practice We now assume that since the causes of the trouble are to be found not at one moment or phase of his life history only but throughout his development, our therapy must aim at presenting that development to the patient himself as it has been revealed to us in his anamnesis and his associations Probably in the last war the link in meaning between contiguous associations was generally regarded, in theory, as a valid basis in investigation, but it was commonly neglected in clinical work in this war we find our psychiatric experience enriched when we pay attention to this simple guide to therapy and research But if we ascribe the change in theory and practice chiefly to the good use made by psychopathologists of the association rule, we must not overlook additions to knowledge made in other fields of psychiatric research

LOCAL CONCENTRATION OF SULPHONAMIDE COMPOUNDS INSERTED INTO WOUNDS

BY FRANK HAWKING, D M Oxfd

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THE insertion of sulphonamide compounds into wounds in order to control bacterial infection seems likely to become more widely practised in the future This paper describes an investigation of the concentration of these compounds (*a*) in the wound cavity adjacent to the drug deposit, (*b*) in the distal parts of the wound cavity, and (*c*) in the living and dead tissue forming the sides of the wounds

MAXIMUM CONCENTRATION IN WOUND FLUIDS

The maximum concentration of sulphonamide, which would occur in a wound immediately adjacent to the drug inserted into the cavity, will depend on the solubility of the substance in the wound fluids Since these are albuminous, the solubility in them will presumably approximate to that in serum, although in some wounds the reaction may be more acid Sulphanilamide and sulphanilylguanidine dissolve readily in water (solubility 1500 and 220 mg per 100 ml respectively at 37° C , Marshall et al 1940), so they may be assumed to dissolve readily in most body fluids No published figures could be found dealing with sulphapyridine and sulphathiazole and albuminous fluids , consequently determinations were made of the solubility of these compounds and of sulphadiazine in serum and in bicarbonate-free Locke's solution * Each compound was shaken up with the medium for many hours in a tube which was corked to prevent loss of carbon dioxide The supernatant fluid was filtered through paper and dilutions were made in the hot room to prevent precipitation by cooling The serum was freshly prepared rabbit serum and the Locke's solution contained NaCl 9 g , KCl 0 2 g , $CaCl_2$ 0 2 g , water 1 litre The concentration of sulphonamide was determined by the method of Marshall and Litchfield (1938) Table I gives the results (average of 3 determinations) The figures for the solubility of sulphapyridine and sulphathiazole in Locke's solution at 36° C are in approximate agreement with those recorded by other writers, and the figure for sulphadiazine in rabbit serum corresponds to that given by Feinstone and others (1940) for horse serum (107 mg per 100 ml)

In a previous article (Hawking 1941) it was shown that when 0 2 g of the compound is inserted into an experimental wound in a guineapig's thigh, sulphanilamide (solubility in saline at 37° about 1500 mg per 100 ml), is absorbed and disappears in less than 24 hours, sulphapyridine (solubility in saline at 37° C 42 mg per 100 ml) persists for 7–10 days, while sulphathiazole (*solubility in saline at 37° C 104 mg per 100 ml*) persists for about 4–5 days Judging by the present figures obtained for the solubilities in serum, the maximum concentration of these compounds in the guineapig wounds will have been higher than was previously assumed when conclusions were based on their solubilities in *saline Probably the* optimum combination of high concentration plus sufficient duration is yielded by sulphathiazole In one human wound, a suppurating sinus packed with gauze plus 2 5–5 g of sulphanilamide every two days, the concentration in the pus taken in bulk was about 48 mg per 100 ml after 24 hours, and about 10 mg per 100 ml after 48 hours

TABLE I—SOLUBILITY OF SULPHONAMIDE COMPOUNDS

Medium	Solubility (mg per 100 ml)		
	Sulphapyridine	Sulphathiazole	Sulphadiazine
Serum, 36° C	61	184	124
Locke's 36° C	41	91	18
Locke's 17° C	17	36	7 8

CONCENTRATION IN DISTAL PARTS OF A WOUND

To study the concentration of sulphonamide compounds *in the parts of a wound distal to the drug deposit* the following technique was adopted

Under complete *anæsthesia a tubular wound* was made beneath the skin of the back of a rat, having two opening to the surface, about 8 cm apart Inside one end was placed a moist swab impregnated with 0 2 g sulphonamide compound, in the middle was placed a swab to act as a barrier and inside the opposite end was placed a swab for the purpose of sampling The two ends of the wound were then closed by sutures The swabs consisted *of gauze 15 × 4 cm* , and they were moistened in bicarbonate free Locke's solution The animals were killed at various intervals, the sampling swab was removed, and the concentration of sulphonamide in it was estimated chemically

The results of these experiments are given in fig 1 in which each point represents the average of three experiments Naturally the figures obtained were somewhat irregular and the curves shown have only an approximate value Sulphanilamide produces a concentration of about 50 mg per 100 ml at the other end of the wound in less than 2 hours , sulphathiazole and sulphanilylguanidine produce a concentration of 14–25 mg per 100 ml in 2–6 hours, while sulphapyridine never produces a concentration higher than about 5 mg per 100 ml even after 24 hours Sulphadiazine produces a low concentration (3 6 mg per *100 ml*) in two hours, which rises to 10 mg at 6 hours, at which level it is maintained for 24 hours Presumably this difference in the rates of spread is due to the differing solubilities of

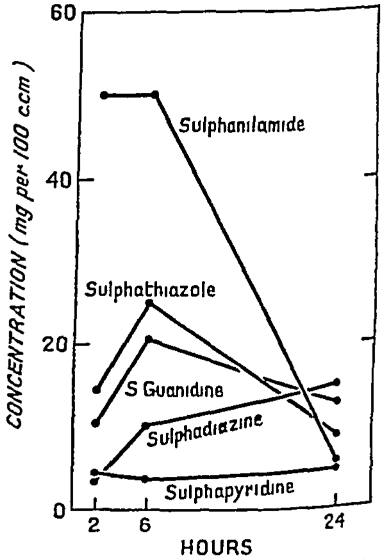

FIG 1—Concentration of sulphonamide at lower end of a wound after insertion of the compound into the upper end

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* The bicarbonate free Locke s solution used had a pH of 6 8 when sodium bicarbonate 0 15 g per litre, was added the pH was 7 6 Both solutions became somewhat more acid when saturated with sulphonamide compounds The figures for solubility in the two cases are approximately the same

patient's mind to objects (people) in whom he is interested, and to those representations of instinct (which we call phantasies) in the more primitive, but none the less important, levels of the mind which are not conscious We do not see the conflict in abstract terms of instinct but in terms of concrete object relationships, historically determined for each individual by his past experiences, including his phantasies These experiences affect his capacity to adjust himself to the changing conditions of his present life The case quoted illustrates only one of the many aspects and causes of mental illness in war, and so may seem to over-emphasise it

There is also a contrast in practice We now assume that since the causes of the trouble are to be found not at one moment or phase of his life history only but throughout his development, our therapy must aim at presenting that development to the patient himself as it has been revealed to us in his anamnesis and his associations Probably in the last war the link in meaning between contiguous associations was generally regarded, in theory, as a valid basis in investigation, but it was commonly neglected in clinical work, in this war we find our psychiatric experience enriched when we pay attention to this simple guide to therapy and research *But if we ascribe the change in theory and* practice chiefly to the good use made by psychopathologists of the association rule, we must not overlook additions to knowledge made in other fields of psychiatric research

LOCAL CONCENTRATION OF SULPHONAMIDE COMPOUNDS INSERTED INTO WOUNDS

By Frank Hawking, D M Oxfd

(*From the National Institute for Medical Research, Hampstead*)

The insertion of sulphonamide compounds into wounds in order to control bacterial infection seems likely to become more widely practised in the future This paper describes an investigation of the concentration of these compounds (*a*) in the wound cavity adjacent to the drug deposit, (*b*) in the distal parts of the wound cavity, and (*c*) in the living and dead tissue forming the sides of the wounds

MAXIMUM CONCENTRATION IN WOUND FLUIDS

The maximum concentration of sulphonamide, which would occur in a wound immediately adjacent to the drug inserted into the cavity, will depend on the solubility of the substance in the wound fluids Since these are albuminous, the solubility in them will presumably approximate to that in serum, although in some wounds the reaction may be more acid Sulphanilamide and sulphanilylguanidine dissolve readily in water (solubility 1500 and 220 mg per 100 ml respectively at 37° C, Marshall et al 1940), so they may be assumed to dissolve readily in most body fluids No published figures could be found dealing with sulphapyridine and sulphathiazole and albuminous fluids, consequently determinations were made of the solubility of these compounds and of sulphadiazine in serum and in bicarbonate-free Locke's solution[*] Each compound was shaken up with the medium for many hours in a tube which was corked to prevent loss of carbon dioxide The supernatant fluid was filtered through paper and dilutions were made in the hot room to prevent precipitation by cooling The serum was freshly prepared rabbit serum and the Locke's solution contained NaCl 9 g, KCl 0 2 g, $CaCl_2$ 0 2 g, water 1 litre The concentration of sulphonamide was determined by the method of Marshall and Litchfield (1938) Table I gives the results (average of 3 determinations) The figures for the solubility of sulphapyridine and sulphathiazole in Locke's solution at 36° C are in approximate agreement with those recorded by other writers, and the figure for sulphadiazine in rabbit serum corresponds to that given by Feinstone and others (1940) for horse serum (107 mg per 100 ml)

In a previous article (Hawking 1941) it was shown that when 0 2 g of the compound is inserted into an experimental wound in a guineapig's thigh, sulphanilamide (solubility in saline at 37° about 1500 mg per 100 ml), is absorbed and disappears in less than 24 hours, sulphapyridine (solubility in saline at 37° C 42 mg per 100 ml) persists for 7–10 days, while sulphathiazole (solubility in saline at 37° C 104 mg per 100 ml) persists for about 4–5 days Judging by the present figures obtained for the solubilities in serum, the maximum concentration of these compounds in the guineapig wounds will have been higher than was previously assumed when conclusions were based on their solubilities in saline Probably the optimum combination of high concentration plus sufficient duration is yielded by sulphathiazole In one human wound, a suppurating sinus packed with gauze plus 2 5–5 g of sulphanilamide every two days, the concentration in the pus taken in bulk was about 48 mg per 100 ml after 24 hours, and about 10 mg per 100 ml after 48 hours

TABLE I—SOLUBILITY OF SULPHONAMIDE COMPOUNDS

Medium	Solubility (mg per 100 ml)		
	Sulphapyridine	Sulphathiazole	Sulphadiazine
Serum, 36° C	61	184	124
Locke's 36° C	41	91	18
Locke's 17° C	17	36	7 8

CONCENTRATION IN DISTAL PARTS OF A WOUND

To study the concentration of sulphonamide compounds in the parts of a wound distal to the drug deposit, the following technique was adopted

Under complete anæsthesia a tubular wound was made beneath the skin of the back of a rat, having two openings to the surface, about 8 cm apart Inside one end was placed a moist swab impregnated with 0 2 g sulphonamide compound, in the middle was placed a swab to act as a barrier, and inside the opposite end was placed a swab for the purpose of sampling The two ends of the wound were then closed by sutures The swabs consisted of gauze 15 × 4 cm, and they were moistened in bicarbonate free Locke's solution The animals were killed at various intervals, the sampling swab was removed, and the concentration of sulphonamide in it was estimated chemically

The results of these experiments are given in fig 1, in which each point represents the average of three experiments Naturally the figures obtained were somewhat irregular and the curves shown have only an approximate value Sulphanilamide produces a concentration of about 50 mg per 100 ml at the other end of the wound in less than 2 hours, sulphathiazole and sulphanilylguanidine produce a concentration of 14–25 mg per 100 ml in 2–6 hours, while sulphapyridine never produces a concentration higher than about 5 mg per 100 ml even after 24 hours Sulphadiazine produces a low concentration (3 6 mg per 100 ml) in two hours, which rises to 10 mg at 6 hours, at which level it is maintained for 24 hours Presumably this difference in the rates of spread is due to the differing solubilities of

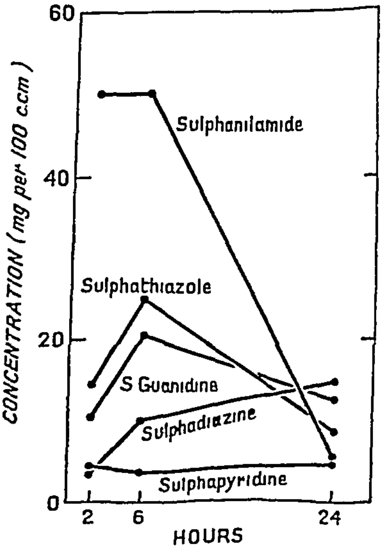

FIG 1—Concentration of sulphonamide at lower end of a wound after insertion of the compound into the upper end

a piece of elastoplast put on leaving a loose "hump" over the actual scar area, the two adhesive surfaces of the plaster should then be squeezed together in order to exert traction on the skin edges and so prevent bursting of the wound. A further piece of plaster is then put over the whole. The wound should be united in about a week. When the first dressing is removed a layer of pus is usually found lying over the wound. Although on culture this usually gives a pure growth of *Staphylococcus aureus* it does not interfere with the healing of the wound. It is always present when a collodion dressing is used in my experience.

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[*] The bicarbonate free Locke's solution used had a pH of 6 8, when sodium bicarbonate 0 15 g per litre was added, the pH was 7 6 Both solutions became somewhat more acid when saturated with sulphonamide compounds The figures for solubility in the two cases are approximately the same

A series of 12 suitable consecutive patients (6 children and 6 adults) were treated in the casualty department of Guy's Hospital, and the results were as follows:

The wounds became infected in 3: 2 children who pulled the dressing off, and 1 adult whose lip had been sutured and in whom the food and saliva had caused a secondary infection.

In the only case in which catgut had been used to tie off a bleeding point a stitch abscess developed but this soon healed leaving a small scar.

The other 8 cases healed by first intention leaving hair line scars which were invisible unless the area was closely examined.

I had intended to see all cases two months after treatment and although all the cases were written for several were not able to be traced, particularly the children. I imagine they must have been evacuated. My results on the whole have been assessed on the condition of the patient on discharge.

Medical Societies

FACULTY OF RADIOLOGISTS

AT a meeting of the Diagnostic Section on May 23, with Dr L. ROHAN WILLIAMS, the vice-president, in the chair, a discussion on

Gastritis and Duodenitis

was opened by Dr F. R. BERRIDGE. From the radiological aspect, he said, it is essential to confine the term gastritis to appearances which have been proved by morbid histology to be due to inflammation. The radiological study of gastritis has been discredited because the functional formation of the mucosal folds in the stomach has not been appreciated. The modern conception of this fold formation is derived from the researches of Forssell. He holds that the mucous membrane is a plastic organ without any permanent folds, but has its own autonomic motility mechanism by means of which it can model its folds, in response to the stimulus of food, into the form best suited to meet the needs of digestion. The mechanism by which folds are formed is twofold—the autonomic activity of the muscularis mucosæ and the varying vascularity of the mucosa and submucosa. In every animal species there is a characteristic arrangement of the folds in the empty stomach, though this basic pattern varies in individuals of the same species and may show small variations in the same individual. Forssell terms this the resting relief of the mucosa in contradistinction to the working form of the relief which varies locally according to the requirements of digestion. It is essentially with the relief of the resting stomach that the question of gastritis has to be considered. Not only do the folds form a typical pattern but they have certain characteristics which can be recognised under the X rays. The normal mucosal folds are regular in direction and outline and have a uniform thickness. They are soft and mobile, and can be deformed and obliterated by stretching or pressure. In gastritis, the autoplastic of the mucous membrane is influenced according to the degree of inflammation present. Mild degrees of inflammation stimulate the autoplastic, severe degrees depress it. These changes are reflected in the fold formation and in the characters of the folds as revealed by the X ray. In the milder degrees of gastritis the stimulation of the autoplastic results in swelling and broadening of the mucosal folds, so that there is a coarsening of the relief pattern. There is also a stiffening of the folds which are not so easily stretched and are less easily deformed and obliterated by pressure. As the inflammatory changes progress these alterations become more obvious. The folds become broader, more swollen and fewer, and then continuity is broken. With more severe degrees of inflammation the autoplastic becomes increasingly depressed, as shown by the inability to reproduce the normal resting form of the relief. In its place there are haphazard elevations of the mucosa in the contracted organ. In chronic hyperplastic verrucose gastritis constant polypoid formations are encountered on the mucosal surface. Other recognisable changes in gastritis are the blurring of the relief by hypersecretion, the presence of mucus which may fill the valleys between the folds, preventing the barium from adhering to the inner surface of the stomach and causing the opaque meal to clump in masses. Dr Berridge concluded that it is possible to recognise a gastritis radiologically, but with the exception of the chronic verrucose type, impossible to state the type. Large and small folds cannot be explained on the basis of hypertrophy and atrophy. The state of the submucosa is fundamental in determining the character of the mucosal relief. The fold formation is a reflection of the condition of the submucosa and not an index of thickness of the mucous membrane.

Dr JAMES DOW said that the diagnosis of gastritis is becoming commoner after many years of disfavour. This is the result of gastroscopic observation and a newly awakened radiological interest. Gastroscopists do not agree entirely with pathologists on the appearance of the inflamed stomach, but the types of gastritis seen by gastroscopists and originally described by Schindler are definite and clear cut. There are probably many explanations why the "antral gastritis" of the histologists is not seen by gastroscopists. Acute gastritis is rarely seen through the gastroscope. Chronic gastritis is the commonest finding and is seen in almost half the stomachs examined. Three main groups of this condition are described:—

1 Chronic superficial gastritis
2 Chronic atrophic gastritis
3 Chronic hypertrophic gastritis

Whether these types are stages of one disease or separate entities is unknown. There is undoubtedly some relationship between superficial gastritis and atrophic gastritis, the position of hypertrophic gastritis is obscure. Radiologists and gastroscopists are not in complete accord about the appearances of gastritis. Schindler and Henning have shown that the radiological diagnosis of gastritis on the basis of the size of the folds of the stomach is unreliable. There are many reasons for discrepancy as gastroscopists and radiologists are examining the stomach from a totally different point of view. Dr Dow has recently gastroscoped a group of patients who were previously diagnosed radiologically as suffering from gastritis. About three-quarters of these cases had gastritis from a gastroscopic point of view. More than half had chronic superficial gastritis and the remainder hypertrophic gastritis of varying degrees of severity. No case of atrophic gastritis was seen. In a large group of patients with gastric symptoms and without ulcers or growths the accurate diagnosis of gastritis is the first step towards successful treatment.

Dr G. MATHER CORDINER, speaking of the radiological diagnosis of duodenitis, said that many clinicians are still sceptical of the existence of chronic duodenitis as a distinct clinical entity and still more sceptical of its radiological diagnosis. The work of Judd and Nagel, McCarthy, Konjetzny and Garry among others proved conclusively that chronic duodenitis does exist as a separate lesion. The radiologist is handicapped by being unable to obtain histological confirmation of many of the appearances which he interprets as duodenitis, because only a small proportion of these cases come to operation and few to autopsy. Further, the duodenum is beyond the range of the gastroscope. Nevertheless, gastroscopy can be of great assistance. The radiographic appearances in duodenitis are similar to those seen in the stomach in gastritis. It is logical therefore to correlate the radiographic appearances of the duodenal mucosa in duodenitis with the gastroscopic appearances of radiologically controlled cases of gastritis. The normal duodenal mucosa shows a typical arrangement of its folds. They are longitudinally arranged, regular in sulphanilamide, but it has the disadvantages of expensiveness, of lower concentration (maximum about 180 mg per 100 ml) and lower diffusibility Sulphapyridine possesses no advantage compared with sulphathiazole, but has the disadvantages of producing still lower concentrations (max about 60 mg per 100 ml) and of persisting in a wound so long that it might act as a foreign body , consequently sulphapyridine may be considered less suitable than the other compounds for the local treatment of wounds Sulphanilylguanidine and sulphadiazine have been introduced too recently for full information to be available concerning them , but there is little indication at present that they would be any more suitable for local therapy than sulphanilamide or sulphathiazole Probably sulphanilamide will be the compound most widely used, but it might be advantageous to reinforce it by mixing it with 10–50% of sulphathiazole, the actual proportions depending on practical experience and considerations of economy

Parallel with the above work, a study has been made on the diffusion of these compounds through agar and gelatine gels The detailed results will be published elsewhere (*Quart J Pharm*) but a brief mention is made here for completeness

The distance travelled is roughly proportional to the square root of the time Thus when a saturated solution of sulphanilamide is placed in contact with one end of a tube of 2% agar in bicarbonate free Locke's solution, containing 0 25% of concentrated hydrochloric acid and 0 02% dimethylamino benzaldehyde, at 35° C , the distance travelled to produce a concentration of approximately 1 100,000 is about 1 cm in 1 hour, 4 4 cm in 24 hours and 8 2 cm in 96 hours The corresponding distances for sulphapyridine are 0 4, 2 4 and 5 2 cm respectively, for sulphathiazole 0 5, 2 7 and 6 cm , for sulphanilylguanidine 0 6, 3 2, and 6 3 cm and for sulpha diazine (approximately) 0 15, 1 7, and 3 9 cm When a saturated solution of a sulphonamide compound is placed in contact with one end of a gelatin cylinder (15% in bicarbonate free Locke's solution) at 15° C , the logarithm of the concentration of the compound in the gelatin is directly proportional to the distance from the interface In the case of sulphanilamide, the concentration after 24 hours is approximately 40 mg per 100 ml at 1 cm and 2 mg per 100 ml at 2 cm The concentration of sulphapyridine, at 1 cm distance, is about 1 1 mg per 100 ml , that of sulphathiazole about 2 3 mg , that of sulphanilylguanidine about 2 6 mg and that of sulphadiazine about 0 4 mg per 100 ml

These figures indicate the degree to which the action of a local application of each of these compounds is limited to the immediate vicinity of the wound-cavity

SUMMARY

The solubility of sulphanilamide in water at 37° C is 1500 mg per 100 ml and that of sulphanilylguanidine is 220 mg (Marshall et al 1940) The solubility of sulphapyridine in serum at 36° C is about 60 mg per 100 ml , that of sulphathiazole about 180 mg , and that of sulphadiazine about 120 mg Presumably these figures provide an approximate estimate of the maximum concentrations which can occur in a wound treated by the local application of these compounds

When the compounds were placed at one end of an experimental wound, sulphanilamide produced a high concentration at the distal end in less than 2 hours, sulphathiazole and sulphanilylguanidine produced a fairly high concentration in 2–6 hours, sulphapyridine produced only a low concentration even in 24 hours, while sulphadiazine produced a moderate concentration in 6–24 hours

Sulphanilamide diffused slowly through a sheet of dead tissue 3 mm thick, and in 24 hours it produced a concentration on the other side of about 26 mg per 100 ml , sulphathiazole and sulphapyridine passed through more slowly and produced only a low concentration (3 mg) after 24 hours Studies were also made of the diffusion of these compounds in vitro

If the sheet of tissue with which the compounds are in contact is alive, with an active circulation, the concentration on the opposite side of the sheet is never greater than it is in the body as a whole

From these experimental results it is concluded that if a sulphonamide compound is placed in the central cavity of a wound it will pass outwards into the prolongations of the cavity, and it will slowly diffuse into dead tissue, but it will not penetrate more than a few millimetres into tissue with an intact circulation , such tissue is reached more quickly and more effectively by oral administration Sulphanilamide is the most penetrating of the compounds studied, sulphathiazole penetrates moderately and sulpha pyridine penetrates least

Grateful acknowledgments are due to Colonel Leonard Colebrook, Messrs Burroughs Wellcome Ltd and Messrs May and Baker Ltd for the supply of the compounds, and to Miss M Kuck for technical assistance

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HAIR-LINE SUTURING IN CASUALTY WORK

BY JOHN GORDON, M R C S
SENIOR HOUSE SURGEON AT THE ROYAL WEST SUSSEX HOSPITAL, CHICHESTER

MANY psychological conditions, particularly the depressions, are due to some unsightly scar or defect of the face of the patient Some of these are due to accidents in youth, which, had they been treated correctly, would not have resulted in a deformity By using eyeless needles and fine suturing materials it has been found possible to sew up a considerable number of these wounds in such a way that a fine hair-line scar results There are, however, some conditions in which the use of such a method is contra-indicated For example, the wound must not be a laceration but an incised wound, straight or curved If the wound is likely to be contaminated, it is unlikely to heal by primary union, and is therefore unsuitable If the bleeding is such that catgut has to be buried in the superficial part of the wound, or if there is any pathological skin condition around the wound the method cannot be used

Instruments should be small and easy to handle, and I have been using the following

A small needle holder I find the Daulat Ram (Down Bros) trachoma needle holder effective

A pair of 4½ in Felchenfelds splinter forceps (Holborn Instrument Co)

A tube of Thackray's Plastasute suturing material (silk worm on a curved No 3 cutting needle)

A pair of fine pointed anatomical dissecting scissors for the removal of the stitches

The stitches are placed about 2 mm apart, so that in a wound 1 cm long about five laps of a continuous suture will be required The use of a continuous suture is quicker, more hæmostatic and more economical, especially where long or multiple wounds are being treated , and although this does not allow for the escape of pus no pus should be present for potentially infected wounds should not be treated in this way The first stitch should be a superficial one at the end of the wound, and should be tied in a surgeon's knot as in an ordinary continuous suture The other stitches should combine the effect of a superficial and a deep tension stitch, and should enter and leave the skin about 1 mm from the wound These stitches should be left loose until all the sutures have been put in, and then should be pulled tight one by one in order to get correct apposition of the skin edges , the final stitch is then tied

A gauze and collodion dressing is suitable for most adults, although in children it is safer to cover this dressing with a layer of Elastoplast so that the dressing cannot be pulled off and the wound become infected, as often happens with the hospital class of patient Nurses complain that collodion makes the removal of the stitches difficult, but dabbing the dressing with alcohol, (not ether) soon releases it from the wound and the stitches can then be removed The stitches should be taken out after 48–60 hours by cutting each lap separately and removing it as though it were a single stitch An elastoplast dressing is then applied in the following way a small piece of gauze is put over the wound, and

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direction and uniform in thickness, soft, mobile, pliable, and easily deformed and obliterated by pressure The changes which can be recognised radiographically in duodenitis consist of variations in the stickiness of the mucosal surface for the opaque medium , changes in the calibre and number of the folds , alterations in the mucosal pattern , and changes in the consistency of the folds The normal mucosa appears radiographically to be a dry surface to which the opaque medium adheres uniformly In duodenitis the degree of stickiness depends on the fibrinous content of the inflammatory exudate The stickiness is diminished in the more recent forms of the disease and increased in the older and more chronic ones The inflammatory exudate often causes a veiling of the mucosal surface One of the most characteristic findings is a broadening and swelling of the mucosal folds, usually accompanied by a diminution in their number Broadening and swelling of the folds is not characteristic of duodenitis unless accompanied by changes in their consistency The folds show diminished mobility and are stiffened so that they are less easily deformed by pressure In very chronic cases the folds appear to be quite rigid structures A common finding is the presence of irregular, swollen and stiffened transverse folds which seem to push apart the main folds The variations in the mucosal pattern in duodenitis are numerous but these abnormal patterns are not met with in asymptomatic and presumably healthy subjects

Reviews of Books

Gynæcological Operations

By J LYLE CAMERON, M D Manitoba, F R C S , F A C S , M R C O G , senior gynæcological surgeon, Royal Waterloo Hospital, London London Humphrey Milford, Oxford University Press Pp 200 21*s*

IT is always difficult to write a theoretical guide to practical procedures, but this book gives clear instructions to the inexperienced gynæcological surgeon Mr Lyle Cameron is necessarily dogmatic, but when the student of this book has gained confidence, using the methods described, he will no doubt vary the techniques, and eventually evolve methods of his own like every other senior surgeon Most gynæcological operations are not urgent, and a timely warning is given, on the first page, that the patient should be kept in bed for 24 hours before operation, while the general health is investigated A paragraph on dressings and after-treatment follows the account of each procedure The dangers of different operations are noted and the methods for avoiding them, or for dealing with them if they arise Indications for operation are given in some cases , here the young surgeon does not need clear-cut instructions so urgently as he does on points of technique, and variations in opinion might well have been included Much attention is given to operations on the cervix and uterus undertaken by the vaginal route Gynæcological operations are probably performed more often than any other abdominal operation with the exception of appendicectomy, as the author points out, and they have played an important part in the development of abdominal surgery, since section for large ovarian cyst was among the earliest of all operations in pre-anæsthetic and pre-antiseptic days With the development of antisepsis and asepsis, access to the abdominal cavity per vaginam fell into disfavour, as being both restricted and necessarily infected Now, however, the use of the vaginal approach in certain cases is again being recognised, and five different operations for the removal of uterus and adnexa are described in this book

Textbook of Gynæcology

(3rd ed) By WILFRED SHAW, M D Camb , F R C S , F R C O G London J and A Churchill Pp 610 21*s*

THIS is now one of the most popular textbooks of gynæcology used by medical students up for their finals , a third edition has given Mr Wilfred Shaw an opportunity to rewrite the text and bring it up to date by the introduction of chapters on endocrine treatment in gynæcology and on the new chemotherapy The opening chapters on the anatomy and physiology of the female genitalia are examples of lucid writing, and first-class illustrations and diagrams drive home the main points But the book excels in pathology, notably that of the ovaries, and for this reason will appeal to others besides the students for whom it was written There is quite enough in the book to pilot an intelligent reader through the M R C O G examination and even through the M D Practitioners will find it useful for reference, and to registrars and first assistants, on whom much of the task of instructing the students falls, it will be a lesson in teaching The text is in large print, easily read at night

Experimental Physiology for Medical Students

(3rd ed) By D T HARRIS, *M D Manc D Sc Lond*, F Inst P London J and A Churchill Pp 292 15*s*

MOST laboratories in this country have a programme of exercises in physiology to which they adhere, and which they sometimes publish with illustrations, in book form Professor Harris's book has a wider scope, and samples of at least two practical courses which are based on it are given in the introduction Representatives of various schools have contributed experiments so as to increase the ground covered The book is copiously illustrated with line drawings, tracings and pictures of apparatus, and is therefore immensely valuable to the student for use in conjunction with his theoretical textbook, whether or not the laboratory in which he works has its own independent set of exercises Many methods and pieces of apparatus are illustrated which the student has no opportunity of seeing, and it is important to him to have some idea of how such things work, whether he is able to use them himself or not A set of exercises in pharmacology is included

Modern Treatment Year Book 1941

Edited by CECIL P G WAKELEY, D Sc , F R C S London Baillière, Tindall and Cox Pp 326 12*s* 6*d*

IN the wide range of subjects, the suitable choice of contributors, and the conviction and reasoning of its advice, this annual of diagnosis and treatment maintains the high standard of usefulness for the practitioner which it attained before the war Now, as the editor points out, it should be of greater value, because so many of our profession are cut off from the normal contacts that cater for mutual discussion and medical refreshment Twelve additional articles on war-time surgery and medicine are included , at present, accounts of acute conditions may be more appreciated by civil doctors in bombed areas, while doctors in the forces will find that the more homely articles on constipation and flat feet meet their daily needs But there is something for all

Orthopædic Surgery for Nurses

and Orthopædic Nursing Care (3rd ed) By PHILIP LEWIN, M D , F A C S London W B Saunders Company Pp 433 7*s* 6*d*

THE third edition of this book is even more entertaining and readable than its predecessors Dr Lewin still has a tendency to regard his audience as senior medical students or even junior house surgeons , and some of the information given—such as the table of differential diagnosis of tuberculous disease, syphilis and osteomyelitis, and the even more heavy classification of chronic arthritis—have no place in a book for nurses But these are faults that may be corrected by any intelligent teacher recommending a book which, on the whole, is probably the best work of its kind in English It has a special value now when there is great demand for nurses with experience in the treatment of orthopædic conditions When a fourth edition is being considered the author might well do some drastic pruning He mentions too many authorities whose doings are of no importance to the orthopædic nurse, and includes too many little sections on rare conditions After all, in most hospitals there are plenty of books of reference available for girls who want to know something about everything

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Messrs HENRY KIMPTON (26, Bloomsbury Way, London W C 1) ask us to say that they are publishing Snell's *Medicolegal* Ophthalmology in this country The book was reviewed in our issue of June 7 (p 724)

THE LANCET

LONDON SATURDAY, JUNE 21, 1941

THE STUDY OF NEONATAL DISEASE

In his Bradshaw lecture last year, of which an abstract appears at the front of this issue Dr J C **Spence** makes a comprehensive survey of disease in infancy This is a complicated and confused subject , it might be called the dark continent of medicine oth in our ignorance of the nature of many of its iseases and in our lack of control of them **Spence** akes a frank confession—and even a painful exposure —of this ignorance not only on the part of medical ractitioners but of their teachers as well His andid facing of facts is welcome as a corrective to he complacency of some recent official announcements on the present state of infant health The field f study in the first year is of vast extent and **Spence** s more concerned with the alpha than with the omega f diseases, suggesting a new grouping of these, based n origins into seven categories On each of these e has something interesting to say but let us here ollow the lines of thought he suggests in two of the roups the new mechanisms that come into play t or very soon after birth, and the peculiar features f infection in the early months of life Faulty mechanisms and infections provided they are nderstood should be easier to control than inborn endencies or the hazards of being born The mechanisms that come into full play at birth are so intricate hat some faults in their working are to be expected Breathing is the most critical of all, and a little check n its mechanism can bring breathing to a full stop n asphyxia **Spence** suggests that faulty mechanics may account for some types of nasal and bronchial stridor in infants The sudden adjustment of the blood-vessels and of the blood itself after birth may also be disturbed, leading to icterus gravis on the one hand, or to a patent ductus arteriosus on the other And there is the long alimentary tract with its complicated machinery of peristalsis and sphincter action Pyloric stenosis has been explained as a neuromuscular disorder of the pyloric sphincter , and this is at least a rational hypothesis **Spence** opens up this field of conjecture by reporting cases from his clinical experience where digestive disorders might be explained by similar mechanical maladjustments in the small intestine Some types of digestive disturbance in early infancy are now ascribed to a faulty bodily chemistry, leading to intolerance of fat, carbohydrate or protein These explanations are conjectures and we may yet discover that faulty mechanics are to blame and that in concentrating upon the chemistry of food and digestion in infants we may have been barking up the wrong tree

Spence tells us that when he and his colleague Dr F J **Miller** made a personal inquiry into the circumstances under which 272 infants died in Newcastle-upon-Tyne during 1939 they estimated that half these deaths were due to infective diseases The number of autopsies is not given, and it is not clear how the proportion was reached , but it is not likely to be an under-estimate The higher the infant death-rate, the higher the proportion of deaths due to infection this significant observation has far-reaching application It means that the great lowering of the infant death-rate all over the world in the last fifty years has been achieved largely by the better control and prevention of infection in infancy It also means that if the present English infant death rate (which is only respectable) and the Scottish rate (which is bad) are to be further reduced this can only be done by a closer understanding of the nature, variety and origin of infections after birth, and by better means of preventing them On this subject **Spence** goes to the root of the matter He points out the differences between the clinical features of an infection occurring for the first time soon after birth, and of its later expressions in a body that has already sustained previous attacks of the same agent , and he calls for a study of these primary infections The nurseries of a maternity hospital with their crop of infections—trivial and serious, local and general—offer a wide range of these first or primary infections , a large-scale and well-planned bacteriological and clinical investigation of them would throw light upon the whole problem of neonatal infection The great surface infections—tetanus umbilical septicæmia ophthalmia—have already been mastered, but the deep infections of alimentary and respiratory tracts still endanger the newborn infant masquerading in death certificates as prematurity and marasmus The risk of contracting gastro-enteritis in hospital is so serious, as R H **Dobbs** has recently pointed out in our columns,[1] as to prejudice the surgical treatment of infants with pyloric stenosis and was described last week in our correspondence columns by P **Williams** and F W M **Pratt** as a disgrace to children's hospitals The risk is as serious probably more so for the infant inhabitants of maternity hospitals

But on this vast subject of infection in infancy we must keep a right perspective Infection in hospitals is only a part of the problem and not the greater part , there remains the mass of infections in homes The great sanitary reforms of drainage, housing, water-supplies and refuse disposal have established a passably high standard of external sanitation , the standard of internal sanitation, created by personal and domestic hygiene is still far too low There can be no doubt that the further reduction of our infant death-rates will depend mainly on lessening the deaths due to infection and this in turn on the reduction of the mass of infective material that still exists in our homes **Spence** is aware of this, and in his final plea for the setting up of research centres where the disease of infancy can be studied he insists that their material of study shall not be confined to hospitals, but must also be sought out in the homes where infantile disease and especially infective disease begins

TOTAL WAR AND THE INDIVIDUAL

The world in which the older of us passed our youth was mature and stable Behind it were vistas of historical events that had prepared the way for this satisfying equilibrium, but those events belonged to a thrilling past and it was not expected that we ourselves should ever have the privilege of taking a personal part in the making of a new history that would outthrill the happenings of olden times It is not easy to

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[1] *Lancet* May 24, 1941 p 664

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THE LANCET

LONDON SATURDAY, JUNE 21, 1941

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But on this vast subject of infection in infancy we must keep a right perspective. Infection in hospitals is only a part of the problem, and not the greater part; there remains the mass of infections in homes. The great sanitary reforms of drainage, housing, water-supplies and refuse disposal have established a passably high standard of external sanitation; the standard of internal sanitation, created by personal and domestic hygiene, is still far too low. There can be no doubt that the further reduction of our infant death-rates will depend mainly on lessening the deaths due to infection, and this in turn on the reduction of the mass of infective material that still exists in our homes. SPENCE is aware of this, and in his final plea for the setting up of research centres where the disease of infancy can be studied he insists that their material of study shall not be confined to hospitals, but must also be sought out in the homes where infantile disease and especially infective disease begins.

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THE world in which the older of us passed our youth was mature and stable. Behind it were vistas of historical events that had prepared the way for this satisfying equilibrium, but those events belonged to a thrilling past and it was not expected that we ourselves should ever have the privilege of taking a personal part in the making of a new history that would outthrill the happenings of olden times. It is not easy to judge what in those days the ordinary man and woman felt towards contemporary events, emotional reactions there surely were among the civilian victims of the Thirty Years War or of the earlier Hun invasions, yet in our own Civil War it is possible to imagine a body of unconcerned and inarticulate people who, being neither Cavalier nor Roundhead, carried on with their daily tasks whilst hoping that the combatants would keep away from their farms or warehouses Jane Austen, picturing in minute detail society during the Napoleonic wars, makes such scant reference to those wars that we have to imagine her people carrying on with their daily lives whilst giving scarcely a thought to the historical happenings around them—perhaps so confident in the final outcome that they left the thinking to the statesmen and soldiers These were gentlemanly wars, and the edifices, public and private, still standing in the Continental cities through which Napoleon's armies had swept, mark how the destruction not of cities but of armies was then the soldier's aim We can again picture, even on the Continent in those eventful times, a civil population not immediately affected by the fighting and able to remain emotionally aloof

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[1] *Lancet* May 24 1941 p. 664

Now war comes into the daily life of every one of us and emotional reactions towards it are unescapable Much has been written about our reactions, and faced by danger of death, maimings, and material destruction of a kind new to humanity, we have agreeably surprised ourselves by accepting it calmly and with a low incidence of the kind of nervous trouble that was so manifest in all the armies engaged in the First German War Making all allowance for the inability not to recognise these nervous disorders in their various disguises, we can safely say that their civilian incidence is lower than it was in front-line troops in that war Indeed, individual examples are not lacking of nervous folk who, under stress of war, have "found themselves" and shown endurance and courage which surprise those who are not aware of the curiously specific nature of pathological anxiety Factors in this relative immunity are the need of the civilian to make self-preservation a duty, and his right to show fear if he chances to feel it, this latter being a privilege that avoids one of the greatest fears of the over-conscientious man turned soldier, but perhaps the strongest factor is the emotional solidarity brought about by the knowledge that we are all in the front line Buckingham Palace and an East End tenement share the same fate, and a spontaneous emotional solidarity is the result of a "total" war against a people already united by the live-and-let-live sentiment that underlies democratic government in normal times The Colonel's lady and Judy O'Grady are more than ever sisters under their skins The nervous subject lives in normal times emotionally isolated from the rest of the herd, but in a time of total war this isolation is overcome and replaced by a feeling through which he becomes again one of a community and thus satisfies a primary need of man, the social animal And, since the nervous person serves as a delicate indicator of the effect of general influences that act upon everyone, we can deduce that what strengthens him strengthens also the ordinary man Because none can escape its effects this war has given us a new confidence in each other and has become a great emotional unifier

SULPHONAMIDES LOCALLY

A LITTLE over a year ago the local use of sulphonamides had barely begun Since then clinical reports have been made of its efficacy in conditions ranging from epidermophyton of the toes[1] upwards But clinical impressions alone are dangerous evidence, the variable factors are many and include the depth and extent of the wound, the tissue affected, the virulence and type of the organism, and the resistance of the patient These can largely be controlled in animal experiments and it is on such experiment that clinical work can be most securely based Enough laboratory work has been done in the last few months to indicate that clinical optimism is justified, not only has the local bacteriostatic action of sulphonamides been confirmed, but Colebrook,[2] Fleming,[3] and Reed and Orr[4] have shown that there is no interference with healing processes and that phagocytosis, leucocytic infiltration and the formation of granulation tissue are not impaired even by high local concentrations Of the three sulphonamide powders usually employed—sulphanilamide, sulphapyridine and sulphathiazole—the last, as Fleming has shown, is by far the most potent against the streptococcus and pneumococcus, and even influences the staphylococcus But in order to be effective the drug must have access to the organism, wounds never have a smooth even surface—Colebrook likens them to the fjords of Norway—and the concentration of a drug in the deeper crevices will depend on the solubility in the wound-fluids of the compound used On another page (786) Hawking shows that, thanks to its greater solubility, sulphanilamide will give a very much higher concentration in a wound than sulphathiazole, moreover it diffuses far more rapidly through dead tissues The solubility, absorption and diffusion of sulphapyridine are relatively so poor that its local chemotherapeutic action is not of much value, although it persists longer in the wounds and has a bacteriostatic action which, according to Fleming, is 25 times greater than that of sulphanilamide, sulphapyridine has no advantages over sulphathiazole and is even less soluble in wound-fluids Hawking[5] and Reed and Orr have also shown that sulphathiazole is the most powerful drug of the three against gas-gangrene infection, and Hawking suggests that, taking all these points into consideration, a powder containing equal parts of sulphanilamide and sulphathiazole is best for local use The sulphonamides are thought, by Woods[6] and Selbie,[7] to act by interfering with an essential metabolite of the infecting organism and it is therefore important to get as high a concentration of the drug as possible into the wound McIntosh and Selbie[8] have shown that in order to get the same concentration in a human wound as they have produced in the wounds of animals it would be necessary to introduce 50 g of powder This is not possible the average wound will only take 10 g of powder and surgeons usually consider it inadvisable to exceed 15 g The powder must be finely divided or it will form lumps which interfere with its solubility Powder sprays are commonly used but many surgeons rub the powder gently into the tissues A level teaspoonful represents 10 g

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[1] Helman, J *S Afr med J* April 26 1941 p 156
[2] Colebrook L *Proc R Soc Med* 1941, 6 337
[3] Fleming, A *Ibid*, 342
[4] Reed G B and Orr J N *Lancet*, 1941, 1, 376
[5] Hawking, F *Brit med J* Feb 22 1941 p 263
[6] Woods D D *Brit J exp Path* 1940, 21 74
[7] Selbie F R *Ibid*, p 90
[8] McIntosh J and Selbie *Lancet* Feb 22, 19 1 p 210

Hawking makes it clear that while sulphonamides are being used locally they should also be given by mouth Locally they penetrate living tissues only to a depth of 2–3 mm , thus the live tissues round the wound can best be approached through the blood-stream. Reed and Orr have shown that the concentration in muscle is always approximately the same as in the blood, and in treating streptococcal infections a blood level of 5–10 mg per 100 c cm must be maintained as McIntosh and Selbie[8] have indicated Blood estimations should be used to check the patient's progress , the technique is so simple that in France they are often done by the nurse The experiences of Mitchell, Logie and Handley[9] in the Libyan campaign confirm that sulphonamides should be given both orally and locally , they found that patients receiving the drugs by both routes were fitter and showed less local sepsis than others They suggest that sulphanilamide (15 g) should be applied to the wound immediately and a further 15 g introduced at the end of operation Orally , the patient is given 27 g in 6 days , doses are temporarily doubled in cases of severe infection Sulphonamides gave better results, they found, than local antiseptics such as eusol and acriflavine ; where the response to chemotherapy was disappointing they found the infecting organism to be *Staphylococcus aureus* In the attack on this organism sulphadiazine seems to promise well Perrin Long[10] finds it to be slightly superior to sulphathiazole in this respect Feinstone[11] intimates that sulphadiazine is more effective against *Clostridium welchii* than any other sulphonamide Its local value, according to Hawking's work, is handicapped by its relative insolubility

MEDICAL PLANNING RESEARCH

THE several published designs for postwar medicine —from TAYLOR'S " Plan for British Hospitals " of two years ago to ROBERTS'S " Future of General Practice last week—have at least demonstrated the vastness and complexity of the subject No single planner or small body of planners can hope to design more than a part of it in any detail This principle has been recognised by the B M A Planning Commission in its appointment of five committees to deal with general practice, special practice, public health, hospitals, and the teaching hospitals—with a sixth to coordinate their ideas It has been carried a step further by Dr PERRY and his friends, who in drawing their rough sketch of postwar hospital services which we published on May 17 no doubt came to realise how much more information they needed before they could begin to make a finished picture They have therefore gathered a team of some forty planners, which through their call for volunteers on another page they hope to expand to at least a hundred These researchers will be split into groups to study the six general and nine special problems which together make up the large query of Medicine after the war Finally the whole will be collated, criticised and edited, and published in book form With the Dawson report, the findings of the B M A commission, and the views of individual prophets, it will provide the Royal Commission on Medical Services, when it comes, with something to bite on

Annotations

BIRTHDAY HONOURS

THE list of honours (see p 800) conferred on doctors is a striking record of the variety of ways in which the medical profession has served the commonwealth Only civil honours have yet been announced , decorations for the fighting services will follow Six knighthoods head the list Dr Hone has deserved well of the city of Adelaide where he has spent his life as hospital physician, director of the radiotherapy clinic and councillor of the university Dr Scott as director of the Bureau of Tropical Diseases in London has done much to help solve the health problems of the Empire General Jolly with 33 years behind him in the Indian Medical Service has guided hospital policy and hygienic measures in Burma and the Punjab and waged constant war on the mosquito Dr Macgregor, the people's friend in Glasgow, has shown the ability of a city health department to handle the transition from peace to war Dr Manson Bahr has added lustre to the name he bears and placed his unrivalled knowledge of tropical diseases at the call of the Colonial Office Professor Stopford's brilliant teaching of anatomy and deanship of the Manchester medical school have been overlaid by seven years as vice chancellor of the university The thirteen commanderships in three orders of chivalry are awarded for the most part for services in India Rhodesia, Mauritius, Malta Newfoundland and Tasmania Dr Alison Glover receives the C B E on his well earned retirement from the Board of Education Dr Massey's devoted work as M O H for Coventry and Dr Knox's organisation of Scottish emergency hospitals receive like recognition Three awards of the O B E also are for municipal health officers Dr Ethel Cassie (Birmingham) Dr J A Scott (Fulham) and Dr Williams (Southampton) To those we have named and to the many others on the list we offer the sincere congratulation of colleagues who rejoice with them in their honourable estate The medical profession will also welcome the C B E conferred on Mr Walter Deacon, just re elected president of the Pharmaceutical Society

A BIOLOGICAL MEASURE OF X-RADIATION

RADIATION of malignant cells is followed by microscopic changes, among which are decrease of cells in mitosis and in resting cells, and an increase in differentiating and degenerate cells Cell degeneration is the visible sign of lethal action , a tendency towards differentiation is commonly seen in irradiated squamous carcinomata in which large masses of keratin are formed A decrease in the number of cells showing mitotic activity can be determined only by counting Its occurrence depends on dosage an insufficient dose is followed by restoration to the ordinary rate of division—only an adequate dose causes a real decrease[1] An attempt has been made by Glücksmann[2] to find a quantitative relationship between these changes and the number of cells which appear unaffected (called resting cells) by irradiation He claims that there is a numerical relationship and that it forms a good guide to prognosis in certain forms of human cancer Biopsies from the growing edge of tumours are examined before, and as often as possible after, irradiation The number of dividing, degenerate, differentiating and resting cells is counted About 500 cells are thus classified and plotted in a graph as percentages of the total number of cells, against the time over which treatment is spread Falling curves for mitotic and resting cells and rising curves for degenerate and differentiating cells indicate that tumour *activity is being gradually* reduced In a few of his cases, the number of cells in mitosis fell to nil within a few days, and a little later no resting cells were to be seen , the clinical results were correspondingly good Resting cells seem to be really the best indicators of effective treatment because those mysterious qualities, radiosensitivity and radio-resistance lie hidden in them If, in a representative piece of tissue, all resting cells have disappeared or if they have been greatly reduced in proportion to all others, the prognosis ought to be good as regards the local lesion But there appears to be some difficulty in judging between resting and differentiating cells, even in squamous carcinomata A special stain, Heidenhain's *azan*, is recommended to make the distinction Glucksmann's observations and conclusions may be limited, for purposes of prognosis, to those tumours in which differentiated cells are easy to distinguish and are known to undergo no further division His method, if confirmed, may provide a basis for studying the physical conditions of exposure, and he has now begun such a study

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[9] Mitchell G A G Logie N J and Handley R S *Ibid* June 7, p 713

[10] Long P H *Ibid* Feb 22 p 259

[11] Feinstone W H *Ibid* May 24 p 681

[1] Lasnitzki I *Brit J Radiol* 1940, 13 279

[2] Glücksmann A *Ibid*, June, 1941, p 187

AMERICAN MEDICINE MUSTERS

AMERICA is already facing the problems of a peacetime mobilisation and since last May her armed forces and the division of medical sciences of the National Research Council have got together to consider the questions which military medicine raises today The first problems set were the treatment of traumatic shock and the chemotherapy of war injuries and infectious diseases But the work is constantly extending and now seven main committees have been set up to deal with chemotherapy, transfusions, medicine, surgery, neuropsychiatry, aviation medicine, and information Thirty-three subcommittees have also been appointed, and where the scope of the committees overlaps the subcommittees form a connecting link—for instance the subcommittee on infectious diseases works with the committee on chemotherapy and with the committee on medicine The army and navy medical corps and the public-health service are represented on the committees and contact officers from other branches of the forces also attend meetings that concern them—the quartermaster corps have been present at discussions on nutrition

The National Research Council is also cooperating with the committee on medical preparedness of the American Medical Association in making a survey and analysis of the medical profession, and a questionnaire has been sent out to the doctors of America by members of the committees on medicine, surgery and neuropsychiatry Intensive courses are being held for reserve officers in the services and circular letters on the chemotherapy of infectious disease, venereal diseases and tropical diseases have been dispatched by the appropriate committees Material for a manual on general medical and surgical treatment in the field has been collected and is being edited by the committee on information Much of this material will appear in a new journal, *War Medicine*, which will serve as the official organ of the committees and to which the committee on information acts as an editorial board

The division and its committees have already offered practical help as well as advice and counsel The tropical diseases committee has prepared a supply of yellow-fever vaccine and arranged for its further manufacture under government auspices, and with the American Red Cross the division is now organising the provision of blood plasma for transfusion The newly formed subcommittee on blood procurement is assuming the supervision of the professional services involved, while the subcommittee on blood substitutes continues to study methods of manufacture The division is also cooperating with the Red Cross in approving selecting the doctors and nurses who are being se England The division has thus set up a comprehe and flexible organisation which should be able to t any problem, and which is an earnest of what med has to offer to the national effort

HUMAN TOXOPLASMOSIS

THE protozoon toxoplasma is a common an *parasite* It has been repeatedly accused of ca disease processes in man, but proof has seldom complete This must depend on transfer of the orga to laboratory animals, and it is difficult to exclud chance presence in the animals before inocula However, in the two groups of cases, briefly referre in our columns a few weeks ago,[1] the evidence fo pathogenicity of toxoplasma in man seems convin and the clinical features are of some interest The case of the first group [2] was a boy of 6 who suffered an obscure encephalitis, with apathy developing thr a semidelirious stage into coma, and muscle twitch and convulsive attacks The illness was a febrile and ended after a month in death There was a gen ised adenopathy and a palpable spleen No menin signs were observed, but the cerebrospinal fluid conta varying numbers of mononuclear cells, up to 2200 c mm A thorough microscopic examination of nervous system post mortem revealed a dozen scatt tiny necrotic foci with round cell infiltration and a cuffing of vessels No unmistakable toxoplasma f were identified in these, but five of eight mice inje with suspension of brain material developed ty toxoplasmic peritonitis, pneumonitis or both, and organisms were both seen in the lesions and transmi with ease to other animals Similar numbers of injected with *olfactory* bulb suspension and with b taken post mortem, together with 200 mice from laboratory stock, were similarly examined, and faile show any toxoplasma These extensive control obse tions make it wellnigh certain that the organi obtained came from the patient's brain and not fro *chance infection present in the laboratory anim* The other case in this group was a boy of 9 who suff from an atypical encephalitis with headache, me confusion, muscular twitchings and one convuls He had fever and enlargement of cervical and ingu glands His illness lasted 8 days and he recove Although meningitic signs were absent the C S F c tained 200 lymphocytes per c mm , and two guinea inoculated with it, intracerebrally and intra abdom ally, died of toxoplasmic infection in 5–6 wee inoculated mice survived 5 weeks Forty control gui pigs, examined for toxoplasma, yielded negative findi This strongly suggests the presence of a less virul strain of toxoplasma in the second patient's C S F , the proof is not quite so convincing as in the first ca

The second group of cases [3] consisted of a man of and a woman of 43, whose illnesses were similar Af a period of some days of general weakness and mala and in one case diarrhœa, fever began fairly sudden accompanied by a generalised red maculopapular r resembling that of Rocky Mountain spotted fev An unproductive cough was present in both, and vag shadows were seen at the lung bases The illness ra rapid course with high fever and the patients died coma on the 6th and 9th days respectively after admissi to hospital The man was also the subject of por cirrhosis At autopsy the lungs in both cases showed patchy or confluent interstitial pneumonitis with co nective-tissue proliferation in the alveolar walls The were some minute areas of focal necrosis in liver a spleen and in one case in the brain Intracellul protozoa having the morphological characters of toxoplasma were seen in lesions in the lung, liver, spleen and brain and in cardiac muscle fibres Blood from the female patient, 2 days before death, was injected into the abdominal walls and peritoneum of two guineapigs which 11–13 days later showed extensive toxoplasmic lesions in liver, spleen, lungs and brain and at the inoculation sites The protozoon was seen in these lesions and transmitted serially from them through other guineapigs Ten normal guineapigs from the laboratory stock examined histologically, and three from which passage of toxoplasma was attempted showed no evidence of harbouring the organism In these cases the histological evidence is strong and the evidence from animal inoculation appears to be confirmatory

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[1] May 17, 1941 p 634
[2] Sabin A B *J Amer med Ass* March 1 1941 p 801
[3] Pinkerton H and Henderson R G *Ib* 807

These two sets of observations open the way for the further investigation of human toxoplasmosis Accessory diagnostic methods such as sputum examination and serum examination for neutralising antibodies are being developed, and it should soon be possible to decide what cases of atypical encephalitis and atypical pneumonia are due to this organism

SISTER PROFESSIONS

MIDWIVES are somewhat apprehensive lest the new division of nursing which the Minister of Health has set up should take over the administration of their affairs without due safeguards, for they regard themselves as an independent profession, the foundation of the maternity and child-welfare service rather than as a branch of nursing But since the midwife is sometimes also a nurse, the public mind has tended to confuse their functions, and indeed as sister professions they are often closely linked But each is a profession in its own right The midwife is recognised by the law in cases of normal midwifery as an independent practitioner, directly responsible for the lives of mother and child, and she is answerable for her work to the Central Midwives Board while the nurse is disciplined, examined and registered by the General Nursing Council This spirit of sisterly independence was implicit in Miss E M Pye's presidential address at the jubilee meeting of the Midwives' Institute on June 8, and also in the resolution which the meeting passed asking the minister to arrange for the affairs of midwives to be dealt with, as hitherto, by the maternity and child welfare division of the ministry If the minister decides that the new division of nursing must deal with midwives the institute hopes that its title will be changed to “the division of midwifery and nursing” Miss Pye believes that the country will soon be faced with a shortage of midwives, for of the 16,000 enrolled between 1935 and 1939 only 28% had notified their intention to practise in 1940 Midwives tend to transfer to the public health service or general nursing, where better chances of promotion and reward are to be found Only those with an intimate knowledge of the profession can find the remedy for this leakage, and this year the institute has set up an advisory committee of domiciliary midwives which, with the matrons' council established just before the war, should provide the machinery for the progressive changes which we hope their diamond jubilee year will bring

BOVINE TUBERCULOSIS

THERE is still a general belief that the bovine type of the tubercle bacillus is less virulent to man than the human type This is more than an academic question at present when all precautions against infection and disease in dairy farms have become immeasurably more difficult There is, indeed, some evidence for believing that there is an increased incidence of *B tuberculosis* in milk samples, but even biological milk-testing has its own problems now that skilled attendants, laboratory animals, and their food and bedding are at a premium Griffith—there was no better authority—believed that the bovine bacillus was at least as virulent for man as the human, the last figures which he published were recently reviewed in this journal[1] Statistics up to the outbreak of this war were published a year ago by Munro[2] who takes a serious view of the mortality both in children and in adults due to the bovine type At Glenlomond Sanatorium bovine organisms have been isolated from 58 persons (20 males and 38 females) suffering from pulmonary tuberculosis When these were compared with 58 consecutive admissions (20 males and 38 females) whose disease was due to the human bacillus a high proportion of bovine strains in the age-group 10–20 years especially among females was evident Munro's bovine type cases showed a high mortality-rate for the 38 female pulmonary cases, 22 were dead at the time of record, 11 ill and only 5 well Of the 20 males 12 were dead 5 ill and 3 well He also determined the strain in infected children by means of gastric lavage (14 bovine and 21 human strains) and found that the bovine type of infection was more easily disseminated with the production of multiple lesions and tuberculous bacilluria than was the human type Excluding that rare group of bovine strains with attenuated virulence for the rabbit, and leaving out of consideration questions of dosage Munro is convinced that the bovine strain is more virulent to man than the human strain Once the bovine bacillus passes the lymphatic barrier it is easily disseminated the onset of serious visceral spread in the lungs and kidney occurs at an earlier age, and the whole duration of the illness is shorter There are three possible ways in which infection can be spread man to man, cattle to man in the course of dairy work, and cattle to man through infected milk-supplies The last obviously has the widest application and brings us back to the King Charles's head of tuberculosis prevention—the pasteurisation of milk Redistribution of population, especially of children, calls for up to date pasteurisation equipment and a high standard of efficiency in milk supplies if spread of the bovine tubercle bacillus is to be kept down

HERB GATHERING

A COMMITTEE of nineteen under the chairmanship of Sir Weldon Dalrymple Champneys, which was appointed by the Minister of Health to “consider the steps which should be taken to secure organisation of cultivation and collection” of vegetable drugs, has presented an interim report They are not hopeful that good would come from the institution of a long term policy of vegetable-drug production within the Empire just now, but in the short-term group of drugs the position is very different, for supplies can be rapidly created and producers can recoup themselves adequately during the war They do not encourage amateur attempts to grow vegetable drugs in climates or on soils whose suitability has not been tested, but urge greater professional production in places where the plants are already cultivated So far as production in the United Kingdom is concerned the committee specify 16 drugs on which attention should be concentrated—agar, belladonna, colchicum, dandelion root, dill, ergot, foxglove, hyoscyamus, Irish moss, liquorice root, male fern, peppermint, psyllium, sphagnum moss, stramonium and valerian With the exception of agar, the home production of all of these was recommended by the Therapeutic Requirements Committee in M R C War Memorandum No 3, agar was in the M R C list of drugs for Empire cultivation Let us hope that the big growers have already increased their acreage under these crops enough to meet demands, for two sowings and two harvests have already passed since supplies from abroad were threatened The amateur can help most by collecting the herbs which grow wild in this country, the Boy Scouts Association and the

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[1] Griffith, S *Lancet* May 17 1941 p 637
[2] Munro W T *Edinb med J* 1940 47, 110

National Federation of Women's Institutes have organised the collection of 30 such herbs, and those who would like to help should get in touch with one of those bodies Both of them have issued pamphlets on identification, collecting, drying and dispatch, but the keen collector who would know more should study the Ministry of Agriculture bulletin,[1] and an illustrated booklet by Mrs Barbara Keen and Miss Jean Armstrong [2]

BLOOD-TRANSFUSION IN RUSSIA

THE extensive use made of stored blood in this country today is based largely on pioneer work by Russian scientists, so that the latest developments in transfusion technique reported from the U S S R [3] have a special interest Professor Seltsovsky, discussing the effect of frequent blood withdrawal on donors, concludes that the repeated removal of 600 c cm , though it produces no subjective effects, retards restoration of the normal blood-picture , at least three months is required for complete recovery Asthenic people, he finds, show the greatest power of regeneration He suggests that 250 c cm only should be taken from new donors, and 500 c cm from accustomed donors The commonest causes of fainting, he thinks, are hunger and exhaustion , and he therefore advises that every donor should rest for 2 hours before giving blood, and from 1½–2 hours afterwards A light meal should be given before, and one of high caloric value afterwards—excellent advice for peace time, no doubt, but a counsel of perfection under present conditions in this country The observations of Bagdasarov in the field of blood transfusion, made as long ago as 1937, have been the foundation of many recent advances , he is quoted in the same review as having treated at least 300 cases of gastric and duodenal ulcer successfully with repeated small intravenous injections (3–4 c cm) of goat's blood Such heterogenous transfusions are also advised for trophic ulcers of the skin and inflammatory joint lesions

Russian workers who have used both serum and plasma as blood-substitutes, conclude that clinically the effects are the same but that serum has practical advantages since it does not form clots on storage as plasma does—a view with which most English workers will agree The Russians have also used ascitic fluid with success as a transfusion substitute, a practice not yet adopted in this country They emphasise the need for giving large transfusions to patients suffering from shock, but 800 c cm is the limit of their suggested dosage Opinions about size of dose appear to be local a litre is regarded here as a minimum dose, and very much bigger quantities may be deemed necessary

MULTIPLE PERITONEAL HYDATIDS

UP to the end of 1939, 1455 records reached the hydatid register of the Royal Australasian College of Surgeons, and Sir Louis Barnett[4] classes about 16% as multiple peritoneal cysts Although in only 16 of these 228 cases was there a history suggesting an earlier rupture of a parent cyst, in the vast majority there had probably been an insidious leakage, perhaps during childhood , it may be recalled that Felix Devé of Rouen concluded from his study of all available records that nearly a quarter of the cysts rupture sooner or later As a surgeon Barnett notes that even a hand in the peritoneal cavity may fail to find a parent cyst within the liver, for it may have shrunk to inconspicuousness, or become hidden by adhesions, or may lie high up on the liver surface He estimates that 99% of the pelvic cysts were secondary, so that the example described by Dr Nicholson on another page is unlikely to prove a primary one How easily symptom mimicry may mislead diagnosis Barnett illustrated in a story he told
himself nearly two years ago[5] Before an opera
had said confidently that here was a typical
adenoma with all the signs and symptoms leaping
eye, yet when he opened the abdomen he found a
infection , indeed, the diagnostic errors that he h
made range from tuberculous peritonitis to preg
He holds prognosis to be less gloomy than it is p
for he has known patients to submit to mor
twenty operations and come up smiling for th
This gives point to his advice not to do too much
sitting, to remove only those cysts that are most
got at, and to be guided always by the patient's
The adventitial coat of a sessile cyst should
dissected away, but the cyst should be treated by
injection either alone or with clean evacuation a
If evacuation is done there should be no drainage
there is suppuration, but the incision in the cyst
be oversewn to prevent adhesions After op
grave anaphylaxis is rare—it was the cause of dea
of these 228 patients—but if its symptoms show
selves, or if the Casoni reaction is strongly p
adrenaline should be given When a cyst ruptur
the peritoneal cavity it is essential to prevent the
casting of hydatid scolices from leading to the pro
of secondary cysts by carefully and gently swabbi
abdominal and pelvic recesses, with a swab soa
ether, avoiding formalin as a local parasiticide b
it is irritating to the delicate peritoneum

MASSEUSE INTO OCCUPATIONAL THERA

THE Ministry of Health is setting up add
E M S orthopædic centres and fracture clinics[6] a
need for occupational therapists is urgent To m
intensive six-month courses for masseuses are
held at the Dorset House School of Occupational Th
now housed at Barnsley Hall Emergency Hospital
first course starts on July 1 and a special war emer
diploma will be awarded to successful students, for
the examination will be conducted by the Assoc
of Occupational Therapists The course will be
free of charge to selected candidates from amon
masseuses now employed at E M S hospitals
will be given free board and lodging and a pe
allowance of £25 for the six months, if they und
to return to work at an E M S centre The cours
intended for masseuses, because time is pressing
though occupational therapy is a separate prof
it combines well with massage The trained ma
already has a background of anatomy, experien
handling patients, and supple and controlled
which should quickly learn the necessary crafts
cal exercises, country dancing and outdoor game
already at the tips of her toes and fingers

The courses at Barnsley Hall will be strenuou
concentrated—real war work, in fact Twenty stu
will be accommodated, and they will sleep in a dorm
hutment which they will have to keep clean, as don
help is unobtainable The hospital has 1500 bed
there will be ample clinical practice The regula
and a half year courses of the school will also be
tinued and applications for both kinds of courses sl
be made to the principal of the school at Barnsley
Emergency Hospital, Bromsgrove, Worcs

THE Bernhard Baron trustees have made a g
£40,000 to the Royal College of Surgeons of Englan
the endowment of a research professorship In ma
the gift the trustees say they realise that one o
essential sinews of the effort to benefit mankind
provision of funds for research, and that the fina
resources of the college may be strained for some
by the need to make good bomb damage It is hea
ing to hear that most of the trustees' past generosi
unharmed, for the Bernhard Baron laboratories at
college have not suffered structural damage and
equipment had already been moved to the cou
where research can continue without incidents

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[1] Medicinal Herbs and their Cultivation Ministry of Agriculture and Fisheries Bulletin No 121 H M Stationery Office 6*d*

[2] Herb Gathering London Brome and Schimmer Pp 51 9*d*

[3] Seltsovsky, P *Voks Bulletin* 1940, p 51

[4] *Aust N Z J Surg* January, 1941, p 223

[5] *Brit med J* 1939, 2. 593

[6] *Lancet* 1 4 p 76

Special Articles

ACTION OF DIFFUSION FACTORS ON TISSUE PERMEABILITY

By Douglas McClean, M B Lond
BACTERIOLOGIST IN CHARGE OF VACCINE LYMPH DEPARTMENT, THE LISTER INSTITUTE OF PREVENTIVE MEDICINE, ELSTREE

In considering the problems of wound infection it should be borne in mind that the organisms of the gas-gangrene group staphylococci and streptococci all produce in addition to their recognised toxins, substances which cause an immediate increase in the permeability of connective tissue It has been known for some years that aqueous extracts of mammalian testicle contain a substance which dramatically increases the permeability of the dermis to injected tissues [22 23 16] This can be shown by the rapid disappearance of the bleb following intracutaneous injection of these extracts and by the spread through a large area of skin of any suitable coloured indicator that may be injected with them This diffusion is so striking that it may be compared with the different behaviour of a drop of water when placed on glazed and on blotting paper Subsequently, it was found that substances with similar diffusing properties could be obtained from filtrates and extracts of staphylococcus and streptococcus,[9] from organisms of the gas-gangrene group and virulent pneumococci [24] from extracts of malignant tissues [11 1] from snake and spider venoms [10] and from leeches [6]

MECHANISM OF THE DIFFUSION EFFECT

Various methods for the purification and concentration of diffusing factors from testicle and bacteria have been described [22-24 15 19 20] but no naturally occurring diffusing factor has been isolated in the pure state The cause of the diffusion was not understood until Chain and Duthie [2] reported that purified preparations of testicular diffusing factor exhibit a remarkable mucolytic activity characterised by a rapid fall in the viscosity of the mucoprotein of synovial fluid and vitreous humour and the liberation therefrom of reducing substances This observation suggested that the mucolytic and diffusing activities are closely associated and may be due to the same factor, and that the spread in the tissues is due to the action of the enzyme on the mucinous interfibrillar structure in connective tissue These workers have since [3] investigated the character of these enzymes derived from testis and other sources They reported good agreement in quantitative comparisons of the activity of enzyme preparations from many sources when this was determined both viscosimetrically and by spreading activity in the skin, they, as well as other workers, have succeeded in isolating a substance closely resembling hyaluronic acid from rabbit skin and this substance is acted on by these enzymes On the other hand Madinaveitia and his colleagues [21] failed to obtain satisfactory correlation between the diffusing and viscosimetric activities of several samples of the enzyme, and they pointed out that it was not justifiable to assay diffusing factors by merely measuring their viscosimetric activity on a mucin substrate It had previously been shown by Meyer and Palmer [30] that the mucoprotein of vitreous humour and umbilical cord contains a mucopolysaccharide which they had designated by the name hyaluronic acid It seems reasonable therefore to call the enzyme which hydrolyses this substance ' hyaluronidase "

While this work was in progress Meyer and others [28] reported the hydrolysis of hyaluronic acid by certain bacterial enzymes, and Robertson Ropes and Bauer [illegible] described an enzyme derived from culture filtrates of *Clostridium welchii* and other organisms which hydrolyses synovial fluid Recently Meyer and his co-workers [15 25] have studied the relationship between spreading factors and hyaluronidase and the character of these enzymes of bacterial and animal origin The evidence they present indicates that while hyaluronidase plays a part in the diffusion in the tissues the phenomenon is a complex one and cannot be explained on the basis of a simple chemical reaction McClean and Hale [27] have also studied the behaviour of these enzymes derived from various sources, and their observations suggest that although the various manifestations of enzymic activity—diffusion, viscosity reduction destruction of the clotting power of mucin and the liberation of reducing sugars—are closely associated and similarly affected by varying experimental conditions, they may be due to separate mechanisms For the present, it is advisable to bear in mind the possibility that the different activities are due to a complex of closely associated agents rather than one enzyme, experimental results, however, support the belief that diffusion in the tissues is due to hyaluronidase activity

Although it has not so far been possible to show that testicular diffusing substances are antigenic, anti-diffusing sera have been obtained by immunisation with purified diffusing substances from *Cl welchii* and *Vibrion septique* [24] These sera have since been shown [27] to neutralise the viscosity-reducing and hydrolytic activity of these enzymes The sera are practically devoid of antihæmolysin and there is no cross-neutralisation of enzymes derived from bacterial species other than that against which the serum is prepared This apparent specificity of the sera may be due to the fact that partially purified enzymes which were used as antigens may have been linked to other bacterial components Commercial antitoxic sera prepared against the toxic filtrates of organisms that produce these diffusing substances contain detectable amounts of anti-diffusing activity, and the fact that reasonably potent anti-diffusing sera can be produced encourages the hope that it will be possible to neutralise the action of these enzymes in the tissues It may be mentioned here that neither sulphanilamide nor sulphapyridine inhibit the production of this enzyme by *Cl welchii* nor do these drugs inhibit the in-vitro activity of the enzyme

THEIR PART IN BACTERIAL INFECTIONS

It has been shown that the inclusion of hyaluronic acid in the culture medium of *Cl welchii* or of streptococci promotes a great increase in the yield of hyaluronidase by these organisms [26 27] This " adaptive enzyme " effect bears on the pathology of infections by organisms that produce diffusing substances For example, gas-gangrene is characterised by extremely rapid spread through the tissues it appears likely that as soon as *Cl welchii* start to proliferate in the tissues the hyaluronic acid there is attacked Thus the organisms are able to use this metabolite, and, at the same time, by destroying its viscosity to increase the permeability of the tissues and make more of the specific substrate available In addition, the presence of hyaluronic acid in the tissues causes the organisms to produce an increased amount of enzyme, thus a vicious circle is set up which promotes the rapid extension of the infection Duran-Reynals [9] correlated the invasiveness of strains of staphylococcus and streptococcus with the yield of diffusing factor, which may act in a similar manner in infections by these organisms Since these enzymes hydrolyse the mucopolysaccharide with the liberation of acetylhexosamine their activity in the tissues may perhaps account for the observation that the glucosamine content of serum increases in some septic conditions and is abnormally high in pneumonia and advanced malignant diseases [38] In pneumonia, not only does the total amount of circulating glucosamine increase but also the ratio of dialysable to non-dialysable glucosamine becomes larger [33]

A study of hyaluronidase production by streptococci shows an interesting relationship between this enzyme and the capsules developed in young culture by some strains [illegible] Hyaluronidase and capsules cannot coexist in cultures of the same group-A or group-C strain since the capsular substance is destroyed by the enzyme, and the inclusion of hyaluronidase from any source in the culture medium prevents the development of capsules by strains of these two groups It appears that the capsules of these strains are composed of hyaluronic acid, which according to Seastone [36 37] and Kendall, Heidelberger and Dawson,[17] is serologically inactive In this respect the capsules of these two groups differ from the type specific capsules of pneumococci and those of some of the other groups of streptococci which are not attacked by this enzyme and are not composed of hyaluronic acid It has been suggested by many workers in recent years that the virulence of streptococci is associated with the possession of capsules, but it is known that other strains which have been described as invasive [9] secrete an enzyme which precludes their capsulation and at the same time increases the permeability of the tissues to the organisms and their products The respective parts played by capsules and by hyaluronidase in streptococcal infection can be unravelled only by infection experiments, but it seems necessary to distinguish clearly between the virulence or killing power of an organism and its capacity to invade the tissues and set up an infection which may be more or less localised Many organisms can set up a fatal septicæmia as a result of a trivial local lesion, but other infections result in extensive tissue invasion and destruction, either without a generalised infection or with septicæmia as a late or terminal development It seems likely to be the latter type of infection which is promoted by hyaluronidase

It is known that certain artificially prepared compounds such as kallikrein,[4] diazotised proteins [5] and ascorbic acid and its oxidation products [27] diffuse in the skin It has recently been shown that certain azoproteins [13] and ascorbic acid [25] [26] also destroy the viscosity of mucoprotein preparations The characteristics of the action of these and other artificially prepared compounds on mucoprotein and their diffusion in the skin differ in several respects from that of naturally occurring hyaluronidase, these compounds do not liberate reducing substances from the mucopolysaccharide, they diffuse in a much slower manner in the skin and their viscosity-reducing activity does not follow the same quantitative laws as that of the natural enzyme

O'Meara [34] has suggested that the "substance B" postulated by him as a component of diphtheria toxin has properties in many respects similar to these diffusion factors and that they may be identical A recent study of the production of this spreading factor and hyaluronidase by many strains of *Corynebacterium diphtheriæ* [26] indicates that it is doubtful whether an enzyme of this nature makes any material contribution to the symptom-complex of diphtheria It seems likely, therefore, that if "substance B" plays a part in promoting the penetration of the tissues by diphtheria toxin, it must operate by some means other than that of the diffusing factors of bacterial origin so far recognised

Menkin [31] has recently reviewed and summarised the results of many years experimental work on the development of the inflammatory response in the tissues He regards the principal sequence of events to be as follows

(*a*) Increased passage of fluid through the capillary wall due to elevation of capillary pressure and increased capillary permeability arising from the liberation of a substance that he has called leukotaxine by injured tissues This substance is probably related to the polypeptides obtained by Duthie and Chain [12] from peptic hydrolysates of fibrin and other blood proteins These polypeptides reproduced the two most characteristic features of inflammation—increased capillary permeability and leucocytic infiltration It is clear that proteolytic processes in the body, such as those initiated by bacterial enzymes, will liberate similar polypeptides

(*b*) Localisation of the irritant by the enhanced passage of fibrinogen through the more permeable capillary wall and the formation of a fibrinous network walling off the inflamed area and occluding the draining lymphatics This favours the accumulation of immune bodies and leucocytes

(*c*) The migration of leucocytes which is promoted by leukotaxine and the character of which is controlled by the pH of the exudate

In a study of the relation between tissue permeability and local immunity Favilli and McClean [14] have shown that inhibition of the spread of diffusing factors is associated with the early stages of an inflammatory response It is obvious that any enzyme elaborated by an infecting agent which tends to prevent this fixation and thus increases the area involved may be important in determining the invasive character of the infection Such an enzyme may enhance the effect of the fibrinolytic and antifibrinogenic substances described by Dennis and Berberian [8] in hæmolytic streptococci and associated by them with invasiveness In conclusion, it should be made clear that it is not suggested that the elaboration of diffusing substance or hyaluronidase "explains" the invasiveness of these organisms, it is obviously only one of many factors involved which vary with each infection This group of enzymes, however, probably do influence the behaviour of these invasive organisms in the tissues, and so play a part in the infection of wounds which should not be ignored

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In England Now

A Running Commentary by Peripatetic Correspondents

A MONTH ago an old love and a job took me through the contending tides of the two channels and the inexorable rocking of Atlantic rollers to the tranquil Isles of Scilly Here where once the wreckers lived, where still Napoleonic cannon lie about in front gardens, where hairy fishermen pick flowers for their meat and beer, and briny farmers talk of strange crops like "princeps," "sol d'or" and "poeticus," I was gripped with the old fascination and reverting to a habit I acquired in the classical upper fourth I saw the goddess of the place as a laughing garlanded woman—a goddess, however, whose hands were horny with household chores, and who had a large family and sons at sea

The last tons of the flower crop, the double-white narcissus and the ixias, and the new potatoes were being sent away, and the carts that took them to the steamer rattled on the grey-brown cobbles of the wharf Scilly has a poor and shallow soil, it is windswept, and its crops have to be protected in tiny fields by hedges of veronica and escallonia Its one advantage is its warm climate which gives early crops A week before I was there a lady journalist had been over and written against this flower growing, stung by the rich harvest they have had this year More food should be grown, she'd said, in an article as shallow as Scilly soil, because cinerarias grow like weeds from cracks in rocks, because a variety of vivid mesembryanthemum falls tangled from stone walls, it doesn't follow that the soil is good Much more food is being grown, but to lift a bulb crop which has been digging itself in for a dozen years takes much labour, and the sons of war-time Scilly are at sea Again flowers are in the same category as cinemas, horse-racing and tobacco—gleams of light in the blackness of total war

I tasted one great joy—a joy which Jenner and Raleigh must have felt as a satisfying surge, the joy of introducing something useful I showed how derris root could cure the war carried scabies in the isles I had one patient, a lighthouse keeper, with avitaminosis, and when I had questioned him about his food I felt like sending a warning to the master mariners of Trinity House.

One tense moment I shall not forget. I was standing among the flowers with the bacteriologist in Holy Vale, one fine afternoon, talking of viruses. Suddenly far away we heard a bugle like the poignant fading of a fiddle note. The Last Post—a young flight-sergeant washed up on Bryher, two months ago. As I left the islands and saw their loveliness hardening into outline, I wondered if England had used these outposts as she should. A sanatorium on Samson? A public school on St. Agnes, where the children of our race could recapture the inspiration of its founders? The Scillies always make one dream, and the dreams have a quality of simpleness and sanity making mainland notions seem a little mad, like their strange conception of the masculinity of gods.

* * *

After a nearby bomb had shot a small girder through the laboratory roof and a lump of concrete had landed on the galvanometer it was not easy to continue research. Makeshift repairs were done to the roof and windows—the windows indeed were put back three times owing to subsequent blasts—and though the clinic now stands isolated patients continue to come. Interruption of research left time for other pursuits—time to scour the grass verges of the roads near my country cottage for rabbit food. Dandelion, cow-parsley, hog-weed, flowering nettle and grass were to be had in plenty and with sack over shoulder I would trudge home with their breakfast. There were six does and about forty young ones to keep going and corn rations have been reduced to a very small amount. For four does the amount is 28 lb. for two months, for eight does 56 lb., but for six does one only gets 28 lb. What an incentive to return eight on the form. Besides there are plenty of does among the young coming along. Hay is unobtainable, so one falls back on peat litter to keep the hutches dry and clean. A long wire run, put out on the grass, allows the young ones plenty of exercise. An old blue Bevin doe is a splendid mother, but she does her best to scratch the hands that feed her. Whether the doe be white, blue or grey, a black buck occasions all the children to be black or dark grey; a very dominant fellow. A grey buck has whites and blues and black among his offspring.

* * *

Five months have gone by since I came to the island—five months during which I have grown used to the forked-radish aspect of my potential patients in their slacks and pixie bonnets, to the redundancy of their complaints: "the bladder cramp" "the gall" "the wind." This last complaint is contracted I think out of sympathy with the natural variety which rarely leaves this wind-scoured spot. So permanent a part of the landscape is it, that it ceases to be an occasional nuisance, and becomes a personality with varying moods—peevish from the east, coldly annoyed from the north, bursting into gargantuan rage as it roars down the valley from the north east—yet never cold. The Gulf-stream gets the credit for this relative balminess, but I have spent so many shivering holidays in places that claimed a semi-tropical climate owing to its benign influence that I packed my trunks with better and thicker bedsocks, woolly scarves, and warm but glamourless underwear. These have since reposed in a trunk and will no doubt end as a banquet for the moths. My opinion on the mildness of the climate is not shared by some of my patients. I visited in her billet a few rainy days ago one who was quite unrecognisable behind a pink knitted nosebag that obliterated the whole of the lower part of her face; a thick woolly scarf passed under the chin and tied on top of the head completed the disguise. In a muffled voice she informed me that it warmed the air, and prevented "influxion of the lungs." Thirteen blankets, two vests, a nightdress, and two cardigans, also guarded her against any possible lung trouble. When I suggested discarding some of these layers, and opening the window she told me indignantly that she had a temperature. I was not surprised, perspiration beaded my upper lip through looking at her. It was a relief to get out into the windy street again. "You see it scutches right up the valley" quavers the oldest inhabitant as she peers over the wall, watching me prick out a few lettuces "that's what it does, scutches up the valley." She is ninety-two, spry as a weasel, and keenly interested in all my doings. Her late Victorian conscience does not approve of this way of spending Sunday morning, but the disapproval eludes her before she has had time to track it down. "I remember a lot of wars," she informs me gleefully. "Not that I exactly remember the Crimea—I were only a mite you see—but I do remember lots and lots of wars, aye I do." She pauses, and her lined old face clouds. "I reckon this be the worst on them all. My grandchildren tell me about these foreign parts—this 'ere Greece now—but it's no use my trying to talk about it, there weren't the book-learning in my young days—I shan't never know where Greece is." Reflecting that many people would like to be ignorant as to the whereabouts of Greece, I watch her scurry away, her stick beating a sprightly measure on the stony lane.

Outpatients are held in the erstwhile dining-room of a boarding-house, now converted into a hospital. Stripped of every sign of its past glory, and filled with austere clinical equipment—a couch, a naked pair of scales, and all the usual instruments of torture—the boarding-house still triumphs. Phantom boarders, ambushed behind ghostly aspidistras, raised shocked eyebrows as I order the patient to get undressed. If we ever have a V.D. clinic I shall insist on holding it in another building, the thought of mentioning the pale spirochæte in these refined surroundings is quite unthinkable.

Outpatients remain outpatients, unaffected by creed, clime, or nationality; that is to say, that they are composed of a majority of fit people who think they are ill, and a minority of ill people who try to pretend they are fit. The former class come merely to spoil the Egyptians with their never-ending requests for medicine and milk; the request for milk usually falls on deaf ears as the applicants invariably turn the scale at thirteen stone. Humour is often supplied by the patients' English: one, when asked when her next period was due, replied gravely, "I await him next week." Another patient entered into a long and involved gynæcological history that included having "her wound scratched" in 1934.

Near the camp is an ancient castle. Fortunate enough to have escaped the despoiling hand of another dictator, Cromwell, it is in a perfect state of preservation. The moat, the keep, the portcullis—all are intact, and guarding these antiquities is a custodian; a species always worth studying for the pearls that fall so thickly and unconsciously from their lips. This one proves a high spot in my collection, and I trail round after him in a maze of ecstasy as he praises the "introspection" of the Normans when they built a well in the centre courtyard, and so safeguarded themselves from defeat by thirst. In a resounding voice he recites us bits of poetry, and shows us photographs of visiting royalty. With a spatulate finger he points out "King Teddy" and someone else whom he refers to with respectful familiarity as "K. G. the 5th," it is not till I catch sight of a well-known bearded face that the penny finally drops. Up and up we go till we come out on the battlements, and here for a minute I cease to hear his absurd patter as I look out over the country spread below us. An aeroplane is throbbing somewhere high up in the cloudless blue sky, soldiers are drilling in a corner of the castle green, a man is driving a flock of sheep across the harbour bridge, and, as the silly things twist and turn, the flat penetrating bark of the sheep-dog rises in the still air. On these walls soldiers have waited for the Red-shanks to come pouring over from Scotland, waited for all the other moments of drama and crisis in the past seven hundred years—and are still waiting. Peering through a slatted gate that shuts off a corner of the main tower, we can see a telephone, a tin hat, and a service respirator. The custodian indicates it carelessly with his thumb. "The Home Guard—they takes it in turns."

* * *

This total war is having a remarkable effect on the prices of second-hand goods—the old-clothes dealers hereabouts have sold out and shut up shop, but it is the old-car and old-typewriter dealers who clamour most loudly for our cast-offs. In the film "Edison the Man" he invents the electrical tape machine and takes it to town wanting $2000 for it; his young woman says "Tell *them* to make an offer." They do, and offer $40,000; Edison is so surprised he cannot speak, but they think they have not offered enough so they go to $50,000, then after a while to $60 000 which is accepted As the big business man hands Edison the cheque, he says "you may know Mr Edison we were prepared to pay $100,000 for your invention" Edison replies "you may know I was prepared to sell it for $2000" The same kind of thing happened when I took a second-hand typewriter along to be sold the other day It had cost £10 four years ago, and I was expecting to get £3 10*s* for it The man looked at it, and then asked me to make an offer which—since he was the one who knew the value and not I—annoyed me, so I doubled my figure, and when he showed no surprise when the word "seven" came out, I added on the odd fifteen shillings I thought he would explode, but he accepted my figure cheerfully Remembering Edison I told him I had been expecting £3 10*s* for the machine, and asked how much he would have gone to "Ten pounds," he replied In fact the bargain had that pleasant eastern flavour in which both sides feel they have done rather well

* * *

I happened recently to be listening vaguely to a German news announcer whose voice was overpowering the soothing strains of some chamber music, when I was struck by a remark he made, stating that in the last big London raid the *Unteroffizierschule had been badly* damaged by high explosives The literal translation of this word being the college of N C O 's, I found myself in a puzzled state of mind for the remainder of the evening A few days later, having forgotten all about it, I was travelling in a bus and overheard a lady reproving a contemporary "You should know better," she said, "than to think all N C O 's are sergeants!" This phrase set me thinking and then of course I saw it all The German listener, earnest fellow, heard the announcement that the Royal College of Surgeons had been hit And, after all, is not one fellow of the college known as Serjeant Surgeon?

* * *

One of the lesser tragedies of war is that death may come so suddenly that we have not time to give to the world our valued little secrets I remember going down to Colchester and on the train I fell in with an old man on a gourmandising trip to the oysters, which were 5*s* a hundred in those golden days We talked of Oysters as a dearly loved mutual friend Just before we parted he leant over and tapped me on the knee "You know I think they taste even better when they repeat" Valuable little confidences like that I remember wallowing in a hot bath after a rugger match when one of my fellow wallowers made a remarkable discovery "If I scratch my umbilicus I get an intense irritation at the anus" And it was so I have often wanted to give this reflex to the medical world, and find out from the anatomical what nerve tracts are involved Then I, too, have my personal secrets I should not like to go to the grave without telling of my great household discovery how bits of cinder, taken from a dead fire, stored in a jam jar of paraffin, can be used one by one as firelighters It is infallible, and I got a great reputation as a firelighter from a hidden jar in the wet camping season of 1936 Then I should like to proclaim to the world that for the last ten years I have never used anything except ordinary soap and elbow grease for cleaning my teeth, and two months ago when for the first time for six years I went to "Nittle Wider-Pease" he found them undented by decay Finally, in case I am snatched from the current of time I feel I should bequeath to my professional brethren my technique in answering the telephone bell To answer in your own voice is to be left defenceless in case of an unurgent call, and few people can disguise their voices effectively Now—grip the telephone in your right hand and your nose in your left "Is the doctor in?" "I don't think he is, but I'll go and see Who is it speaking, please?" says a strange nasal voice that you wouldn't recognise yourself Lay down the phone and tap with your foot on the floor, diminuendo That is Nosey going away to find the *doctor* You may breathe naturally now and think the matter out After a suitable interval you tap on the floor with your foot again, this time crescendo, pick up the phone, and (*a*) gripping the nose as before "I'm sorry, the doctor isn't in at present Can I take a message, Mum?" or (*b*), in your own voice "Hullo, Jones, about that match on Saturday "

BIRTHDAY HONOURS

THE honours list issued on June 12 cont
following names of members of the medical profe

K C M G

FRANK SANDLAND HONE, M B Adelaide
Consulting physician to the Adelaide Hospital
HENRY HAROLD SCOTT, M D Lond , F R C P , D P H , D
Director of the Bureau of Hygiene and Tropical
London

K C I E

Lieut General GORDON GRAY JOLLY, C I E , M B Edin
D T M
Director general of the Indian Medical Service

KNIGHTS BACHELOR

ALEXANDER STUART MURRAY MACGREGOR, O B E , M
F R F P S , D P H
Medical officer of health for Glasgow
PHILIP HENRY MANSON BAHR, C M G , D S O , M D
F R C P , D T M & H
Consulting physician to Colonial Office
JOHN SEBASTIAN BACH STOPFORD, M B E , M D Manc , H
Dubl , F R S
Vice chancellor of the University of Manchester

C M G

JOHN FEARBY CAMPBELL HASLAM, M C , M D Edin , F
D P H
Director of medical services, Northern Rhodesia
JAMES BALFOUR KIRK, M B Edin , M R C P , D P H , D T
Director of the medical and health department, Maur

C I E

Lieut Colonel CODANDA MADIAH GANAPATHY, M C , M
I M S
Director of public health, Madras
Lieut Colonel MARK ALLEYNE NICHOLSON, M B Lond , D
Chief medical officer in Central India and residency
Indore
Lieut Colonel CAMERON MACDONALD NICOL, M D Aberd
Lately director of public health in the Punjab
Major General HUGH STOTT, O B E , M D Lond , F R C P
Surgeon general at Madras and lately principal of t
George Medical College, Lucknow
Lieut Colonel GEORGE VERGHESE, M D St And , D P H ,
& H
Director of health and inspector general of prisons, Or

C B E

Prof A V BERNARD, O B E , M D Malta, D P H , D T M
Chief government medical officer for Malta
JAMES ALISON GLOVER, O B E , M D Camb , F R C P , D P
Lately senior medical officer to the Board of Educatio
JOHN CRAWFORD KNOX, B Sc Glasg , M B Leeds, D P H
Hon consultant adviser to Secretary of State for Scot
emergency hospitals organisation, and medical superin
of the Royal Infirmary, Aberdeen
ARTHUR MASSEY, M D Leeds, D P H
Medical officer of health for Coventry
HARRIS MUNDEN MOSDELL, M D Toronto, L M S Newf'ld
Secretary for public health and welfare, Newfoundland
ALBERT WILLIAM SHUGG, M B Melb
Hon medical officer to the Children's Hospital,
Tasmania

O B E

Mrs ETHEL CASSIE, M D Edin , D P H
Senior assistant medical officer of health (maternity an
welfare) for Birmingham
THOMAS HERBERT DAVEY, M D Belf , D T M
Director, Sir Alfred Lewis Jones research laboratory,
Leone
Lieut Colonel JOSEPH MARTIN REEVES HENNESSY, L R
I M S
Civil surgeon, Jubbulpore, C P
HARRY BROWN HETHERINGTON, M B Toronto, M C P S On
Senior medical officer for the Solomon Islands
NARIMAN MUNCHERSHAW HODIVALLA, M B Bombay,
D T M
Medical officer of health for Aden
ANDREW LESLIE DYKES, M D *Edin* , D P H
Hospital officer for the southern region of the E M S
Lieut Colonel IAN FRASER, M D , M Ch Belf , F R C S , F R
Commissioner of the St John Ambulance Brigad
N Ireland and assistant *surgeon to the* Hospital fo
Children, Belfast
THOMAS RITCHIE RODGER, M D *Glasg* , F R C S E *J P*
Chairman of the Hull and district juvenile advisory
mittee, *and* consulting surgeon to the ear, nose and t
department of Hull Royal Infirmary
JOHN ALEXANDER SCOTT, M D *Lpool*, D P H
Medical officer of health for Fulham
Major FREDERICK AUGUSTUS BERRILL SHEPPARD, M B
F R C S E I M S
District medical *officer* Madura Madras
HUBERT CECIL MAURICE WILLIAMS M R C S D P H
Medical officer of *health for* Southampton

Letters to the Editor

THE FUTURE OF GENERAL PRACTICE

SIR,—To me the most significant paragraph in Dr Harry Roberts's glimpse of the future is his quotation *from Barbusse which emphasises the importance of the* individual man in any collective organisation Few will dispute this in theory but in playing the game of medical service designing so popular at present the importance of the individual is not always duly regarded In the E M S, for example classification of patients tends to be based on the pathology of tissues rather than on complete individuals, and on the staff side a small number of consultants are asked to *attempt a degree of clinical* supervision quite beyond the powers of any one man Application of the methods of big business to professional spheres stultifies those members who are not at the top and sometimes reduces well-meant supervision to mere interference

The size of an organisation or of its parts should be related to the individuals who compose it, each member should be given opportunity to attain the full stature of which he is capable The Nuffield Trust proposes to establish large regions for hospital purposes In the centre will be a " key " hospital surrounded by a large number of satellite hospitals devoted to different purposes, where the " cases ' will be moved about like the parts of a motor-car on a moving belt The staffs of the key hospitals will dominate the professional lives of those attached to the subordinate hospitals, giving a small number of men the chance of brilliant careers but thwarting the development of the great majority An area stretching from Carlisle to Anglesey and centring on a key hospital in Liverpool has been suggested as one region If this is typical of what is to happen throughout England the scale of the error will be very large

Liverpool HENRY H MACWILLIAM

MEDICAL PLANNING RESEARCH

SIR,—The nature of the war has made it clear that a considerable degree of peace-time reconstruction of all kinds will be inevitable, and the Government have already recognised this by the appointment of a cabinet minister to inquire into some of its aspects Medicine will unquestionably be affected and we feel that serious consideration should be given now to its future needs There are many signs that the younger doctors in the country appreciate this and it is our aim to collect and coördinate their thoughts so that they can be clearly stated at the proper time We are aware that the B M.A. have set up a planning commission and other bodies have set up committees with similar purpose, but we feel that there need be no conflict While we wish to emphasise the views of the younger half of the profession we also hope to enlist the sympathy of many of our seniors, and will welcome their support and criticism We therefore invite all who agree with our guiding principles to join us Our principles are three

1 In assessing the *past, and in planning the future, we will* proceed by scientific methods We will collect all available evidence, we will believe according to the evidence, and we will admit ourselves wrong whenever we are shown to be so by the evidence As far as is humanly possible we will examine all proposals (and the evidence on which they are based) without prejudice We will give to tradition and custom their due weight, but not more than their due weight, and we will not disregard a thing merely because it is old, nor regard a *thing* merely because it is new By so doing, we hope to avoid unseemly squabbling and makeshift compromise, and at the same time achieve a high degree of unanimity

2 We regard committees, congresses and meetings as valuable for exchanging ideas, but of much less value for scientific research, executive work or practical planning Our decision is reinforced by the practical difficulties of geography and transport which make such meetings impossible at the present *time Our proposed plan of campaign*, outlined below, enables all who care to do so, including doctors serving in the Forces at home or abroad, to express their considered views and the reasons behind their views

3 The first consideration of all planning and proposals must be the maximal benefit of the maximal number of patients The second consideration must be the conditions of work of those who serve the patients (doctors, nurses lay administrators, almoners, *technicians* &c) Where *these* two clash the first must have precedence But unless both are considered the first will be nullified

Since we wish to press our claims on their merits as objective scientific and practical proposals rather than as having the backing of so many thousands of supporters we invite only those who are prepared to cooperate *actively* to join in our research *Coöperation* can take either or both of two forms We give below a list of subjects which we propose to consider Any member may choose one or more of these subjects and prepare a draft report (giving a summary of the present situation together with his proposals for the future) The time allowed for this preliminary drafting will be 3 months It is hoped to have at least *3* drafting members reporting *on each subject, and on the major* subjects considerably more When the drafts on each subject have been received they will be collated and a single " preliminary " report prepared The work of collating will be carried out by an editorial group composed of the signatories of this letter and any who will volunteer to join them Each of these preliminary reports will be submitted to all members for comment and criticism The criticisms and comments will be studied, and wherever they are an improvement on the preliminary reports they will be embodied Thus a series of final reports will be prepared, and we hope to issue these as a book When this stage is reached our task will be ended

Ordinary or critical membership is open to all It is intended that in most cases drafting membership will be for any doctor or dentist who has been qualified less than 21 years, or for any final-year medical student nurse lay administrator, almoner, dispenser, hospital technician, or other person interested in or connected with our health services who is not over 45 The membership fee in either case is 10*s* 6*d* This is necessary to cover clerical costs and postage , further, we believe that those who have something worth saying will think it worth while to pay 10*s* 6*d* to say it and that those who have not will not Prospective members should send their subscriptions to Dr Kenneth Perry, The Connaught Hospital, Walthamstow, London, E 17 Critical members must bear in mind that they can anticipate nothing beyond a receipt for at least 5 months , only then will the first preliminary reports be ready All members should keep Dr Perry informed of changes of address

Drafting members should name their subject or subjects at the time of paying their subscriptions They will then receive detailed marching orders and suggestions —which, of course, they will be fully at liberty to disregard In general *we will ask them to* pursue the scientific method of collecting evidence and basing their conclusions upon it In this connexion we can recommend the P E P report of *1937* or in shorter form the summary by S Mervyn Herbert " Britain's Health ' (Pelican 6*d*)

The subdivisions of our problem which we propose, and from which we invite our drafting members to take their pick, are as follows

(A) GENERAL PROBLEMS

1 *Medical needs of the population* —The postwar population , the distribution of the population , the population's needs, in terms of doctors (general practitioners consultants, specialists, research workers, public health workers), dentists, nurses, almoners and social workers, clinics, hospital beds, environmental services, nutritional services

2 *Capacity of the population to pay for its needs* —The national income, the proportion spent on the health services, how it is collected, how it is spent, the individual capacity to pay , the proportions of the population in different income groups , family budgets

3 *How should the population pay ?*—The patient's point of view cash payment, insurance, rates, taxes The doctor's point of view fees, capitation fees, salaries, for G P 's, consultants and specialists, hospital staff, public health workers Grading of patients on capacity to pay

4 *How should the population be served ?*—General practitioners , free choice of doctor , clinics , health centres , small hospitals , large hospitals , hospital groups

5 *How should the services be distributed ?*—Chance, tradition, planning, local authorities, regional authorities

6 *Administration* —The need for individual autonomy, the need for local autonomy, team work, the firm in general practice, the firm in hospital, medical and lay administrators, committees (advisory and executive, small and large, medical and lay), authorities (local, regional, national), forms and red tape

(B) SPECIAL PROBLEMS

7 *Hospital Services* —Regionalisation, unification of control, unification of finance, regional hospital authorities, national hospital authorities, size of hospitals, nursing-homes, dispensaries, hospital groups, town or country hospitals, design of hospitals, preservation of traditional features (names of hospitals, wards, &c), special hospitals (as part of hospital groups, as national specialist centres of teaching and research), outpatient services, appointments for outpatients, clinics, emergency services, the non-urgent patient, waiting-lists, ambulance services, medical superintendent or firms and units, resident medical officers and resident surgical officers, medical or lay administrators, hospital committees (lay, medical), internal administration of hospitals, consultant and specialist services (in hospital, in the home, consultoids, "Harley Street"), the "private patient", medical staff (part time, whole time), resident medical staff, continuity of treatment, hospital records, clerical assistance for medical staff

8 *Specialist Services* —The apportioning of beds according to the needs of the patients, need for flexibility within hospital services according to changing needs of the population General medicine, general physicians or special physicians, diseases of the chest, tuberculosis services (tuberculosis officers, sanatoria, Papworth, the employment of the tuberculous in sanatoria), cardiology (cardiac invalidism), gastro-enterology, biochemical medicine, neuropsychiatric services (neurology, psychiatry, psychotherapy, occupational therapy, child psychiatry and child guidance, institutional treatment, neuropsychiatric clinics, mental hospitals, defective institutions, epileptic colonies, prisons and criminal psychopathic hospitals, the case for a combined service with periods of work in each type of institution, the psychopath at large), arthritic services (physiotherapy, hydrotherapy, spas), fever services, pædiatric services, school medical services; venereal services, dermatological services, tropical diseases, convalescence, rehabilitation, the chronic sick General surgery, general surgeons or special surgeons, anæsthesia, cancer, traumatic surgery (fractures, burns), orthopædics, care of the crippled and permanently incapacitated, plastic surgery, massage and physiotherapy, pulmonary surgery, cardiac surgery, abdominal surgery, genito-urinary surgery, cranial surgery, ear, nose and throat (tonsils and adenoids, the deaf and dumb), ophthalmology (spectacles, opticians, the blind), gynæcology and midwifery (institutional, domiciliary, the midwife), maternity and child-welfare services, abortion, birth control, sterilisation, euthanasia, eugenics, radiology (who should interpret radiograms, radiotherapy, radium, radiographers), pathology, bacteriology, biochemistry, clinical pathology, laboratory technicians, transfusion services, dentistry (as part of a national health service, internal problems), pharmaceutics (dispensers, cash chemists, manufacturing chemists, patent medicines)

9 *Medical Education* —The supply of students, cost of medical training, preclinical studies, clinical studies, social studies, environmental studies, apprenticeship in practice, examinations (multiplicity, bookishness, cramming), post graduate training (refresher courses, foreign travel), mixed or unisexual medical schools, university hospitals, research, the film in medical education

10 *General Practice* —Single handed or firm, the locum, the assistant, sale of practices, pensions for G P 's, scope of general practice, need for consultants, pathology in general practice, G P specialists, G P 's and hospitals, the panel and its extension, number of patients per doctor, certificates, dispensing, the panel from the patient's point of view (sickness benefit, additional benefits, approved societies), contract practice, clubs, workmen's compensation, domestic help for the sick, should the G P 's run the clinics ?, coordination of G P 's (panel committees, regional medical officers), special war problems (shelter doctors, evacuees)

11 *Environmental Health Services* —Local authorities or regional authorities, duties of the M O H, size of M O H 's area, sanitation (rural problems, water supply, refuse disposal), food (protection, nutrition, school meals), epidemiology, vital statistics, port health authorities, industrial medicine (hours of work, holidays, unemployment a health, health education, physical education), medico leg services (coroners, medical witnesses, medical assessors, ne for an institute of forensic medicine)

12 *Medicine and the Defence Services* —R N, R A M C R A F, Ministry of Pensions, I M S, Colonial, Mercha Navy The case for a combined service with periodical wo in each

13 *Nursing Services* —Recruitment, training, paymen pensions, domiciliary nursing (district nurse, private nurse health visitors, specialised nursing (fevers, tuberculos chronic sick, mental, midwives, industrial nurses, season features of nursing, need for a pool of nurses, the ma nurse

14 *The Almoner and Social Services* —Recruitment, trai ing, payment, pensions, scope of work, specialised soci work (mental health, family visiting, social research)

15 *Miscellaneous Problems* —The E M S, the state liability in war, ancillary medical services (optician masseurs, chiropodists, laboratory technicians, &c), speci problems of medical research ("pure," clinical, social attempts to combine teaching, administration and researcl health services in other countries, medical missions, Hig lands and Islands medical service, Gloucestershire medic services, Nuffield Provincial Hospitals Trust, Pione Health Centre, Peckham

The list is a formidable one With its 15 main hea ings and some 320 subject headings we hope that it fairly comprehensive Experience may show that needs revision, and we are ready to admit errors omission or commission There has inevitably been small amount of overlapping, where the same subje requires consideration from more than one aspect. T list illustrates the size and complexity of the problem which have to be studied, as a corollary it illustrat how essential it is that planning for the future should done as a large-scale cooperative research rather than a series of isolated efforts

It is, of course, open to a drafting member to choose main heading, or several subject headings Even if eac drafting member undertakes a wide subject or range subjects, we shall need a large number of such member If any drafting members also wish to undertake th work of assessing, collating and subediting reports the should indicate this when writing to Dr Perry

The signatories of this letter were recruited solely b personal contact They make no claims to represent th whole profession, and while they are drawn from as wid a circle as possible there are necessarily many gaps to b filled They profess no sectional interests

Sidney Abrahams
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C G Learoyd
A David Le Vay
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D McGavin
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Hugh Ramsay
A H T Rob Smith
Alan F Shirras
A H M Siddon
Charity Taylor
Stephen Taylor
William A F Thomson
Doris M Thorn ton
R E Tunbridge
J Michael Vaize
H J Voss
Philip Wiles
Clifford Wilson
Henry Wilson

SULPHONAMIDE RASHES

Sir,—Many workers who have observed the effect of sulphonamide compounds in large numbers of case will challenge some of the observations made in you leading article last week If the treatment of a particula case with sulphonamide is justifiable, then the cessatio of chemotherapy solely on account of the appearance o a rash is not justifiable The majority of drug rashe seen during the administration of sulphonamides ar due to *sensitisation* and will clear much more rapidly on desensitisation by continued therapy than they wil if the drug is withdrawn Further, the patient may remain sensitised for long periods if the treatment is discontinued and symptoms, which may even be alarming, frequently occur if a sulphonamide is administered several months later—a not unlikely occurrence in these days of chemotherapy If the rash is due to drug retention sulphonamide therapy should not be continued and elimination can be hastened by an increased fluid intake Werner (*Lancet* 1939 1 18) has described a simple urinary test which can be of value in indicating the possible cause of a particular rash Rashes which are associated with photosensitisation usually occur before the eighth day of treatment, and it is customary to stop administration in these cases also In all cases of suspected sulphonamide rash, the blood-picture should be examined but in the majority of cases there will be no contra-indication to the continuation of treatment, and in fact it would be better continued In my experience the differential diagnosis of sulphonamide rashes is sometimes extremely difficult and reliance on Koplik's spots is probably of theoretical value only It not infrequently happens that the patient withholds information from a second practitioner that he is taking a sulphonamide and several of my patients have thus been sent to fever hospitals with a diagnosis of one of the common exanthemata The more general use of Werner's test would help to minimise these mistakes

London, W 1 DAVID ERSKINE

“ SCIATICA ”

SIR,—To answer all the questions raised in Mr Bankart s letter would need not a letter but a monograph and whatever we understand by the term sciatica ’ the time is not ripe for that But a few comments may serve to clear the ground In the first place, no-one need be distressed by the suggestion that he is ‘ out of touch with a great deal of modern thought and writing on the subject,” even if the magic word research ”—as preferred by Mr Kellgren—be substituted for “ thought ” Viewed, as this problem should be, against the general background of neuropathology, much of this thought and writing is singularly unconvincing and some of it irrelevant It is in itself out of touch with the problem At the same time no-one will dispute that as a title “ sciatica ’ has come to require precise definition Until we have this we cannot discover with any certainty what the thought and the research are all about, and whether or not they have anything to do with disorders involving the sciatic nerve Apparently, in some cases they have nothing to do with them Yet even a definition seems scarcely enough Today numerous states of disordered function of the nervous system, with or without structural change, have been found to provide other than purely neurological problems They have thus come to be studied by observers unfamiliar with the known modes of reaction of the nervous system to disease, with the inevitable result that a number of ad hoc, and often fantastic, hypotheses have gained currency that have no relation to the general body of neuropathology Sciatica is an example of this, but it is by no means the only one for we have seen the same thing in the case of beri-beri and other varieties of polyneuritis Therefore definition of our terms of reference and contact with neuropathology—familiarity with the material of study and its modes of behaviour—are surely necessary preliminaries to any useful consideration of sciatica It is perhaps the salient feature of much modern study of sciatica that it has dispensed with both, and the word “ sciatica ” has come to mean so many things that it is in danger of meaning nothing I cannot agree with Mr Bankart that this state of affairs is progress unless it is progress towards confusion

Hitherto all neurological writing has taken for granted that by sciatica we refer, at least to disorder of function of the sciatic nerve or of its component elements , and if we are to keep a rational use of the term we must get back to this basic notion Some have sought to distinguish between a sciatica that is pain only, a neuralgia, and a sciatica that is the clinical expression of an underlying interstitial neuritis of the nerve or its component parts Thus, in Kinnier Wilson's recently published book, we read of “ sciatic neuralgia ” and of “ sciatic neuritis ” But it is clear that he drew no essential pathological distinction between the two both being the expression of interstitial neuritis He also allowed of the categories of “ symptomatic ’ sciatica, and of pain referred along the course of the sciatic nerve where the nerve itself was not involved in any disease process Sciatic neuritis being a non-fatal illness our knowledge of its morbid anatomy and of its causation are admittedly less than we should like. Still there is clear evidence that an inflammatory reaction of the nerve coverings is more than a figment, and various naked-eye and microscopic changes have been described Those who maintain that there is no such process and no symptom-complex expressive of it, assert no more than their imperfect acquaintance with clinical medicine

Neurologists recognise the occurrence of pain referred along the course of the sciatic nerve and arising from local lesions not directly involving the nerve, but they would probably maintain that this state of affairs is pathologically distinct, and clinically distinguishable from true sciatic neuritis, and should not be spoken of as sciatica Finally, they admit a “ symptomatic ” sciatica in which the nerve or its component elements are involved by the extension to them of inflammatory or neoplastic lesions arising outside them , or by compression as by a herniated intervertebral disc Here, also, neurologists would mostly maintain that this symptomatic variety is clinically distinguishable from true sciatic neuritis which is an illness with quite characteristic behaviour I submit therefore, that clarity of thought and expression will be best served by restricting the term “ sciatica ” to this interstitial neuritis, adding the qualifying term “ symptomatic ” in the circumstances detailed above, and that we do not use it for cases of pain referred along the nerve where this is not itself the seat of disease or damage

As to the sciatica of lumbar spondylitis, regarded by Mr Bankart as the commonest variety, I would submit that no-one can with any certainty correlate the X-ray appearances of spondylitis with concurrent pain As revealed by the radiogram, the most advanced cervical spondylitis may be found in middle-aged or elderly persons who are symptom-free, and the same is true of lumbar spondylitis How often is not the latter condition, clinically silent discovered in a radiogram taken for other ends ? Both sciatica and spondylitis occur over approximately the same age-periods and to attempt consistently to correlate the two must often be to jump a wide and deep gap of pure speculation I cannot accept Mr Bankart's invitation to jump it with him We are far too ready to become the intellectual slaves of the radiogram, to let it do our thinking for us forgetting that the very essence of clinical skill is to assess the relative value of all available modes of investigation, clinical and instrumental Instrumental methods merely make another call on clinical judgment , they are not a substitute for it

London W 1 F M R WALSHE

E M S

SIR —“ Cabuncus ” complains that E M S patients have no convalescent homes, but after weeks in some primary base hospital are “ hurled back homeless on the mercy of friends ” This may be the case in his sector, but I am glad to assure him it does not obtain everywhere In the Coventry sector all E M S patients if their condition will benefit by it—and this includes civilian air-raid casualties to whom I presume ‘ Cabuncus ” particularly refers—pass from base hospitals to auxiliary hospitals These are convalescent homes run under Red Cross auspices in large country houses Owing to pressure on base hospital beds this joy of convalescing in the country has been extended by the hospital officer to include ordinary civilian sick a privilege which has wrought much good and for which all are extremely grateful Thus a large number of civilian sick and air-raid casualties, including all the wounded nurses from Coventry Hospital, are at the moment convalescing in delightful surroundings

GERALD ALDERSON,
Coventry. Group officer

SIR — Cabuncus raises some important points in the defects of the E M S

Specialists — Surely these can be housed per night at a hospital by a rota system so that they will be on the spot if required instead of being called up during a raid

Smaller hospitals —These might well be used for chronic cases or as convalescent homes for air-raid casualties, instead of opening up a whole lot of "auxiliary" hospitals, so saving staff and expense

Staff —Not only the medical staff but the local nursing staff should be exchanged by rota The exchange of nurses is an express recommendation by the Ministry of Health but is not being carried out because of jealousy between matrons When urgency demands their transfer they will not know where materials are kept or the run of the hospital and will need someone to guide them

Doctors —There is no real shortage (vide advertisements for doctors and of doctors for posts) but a maldistribution Most medical men have no organising experience or ability but some have, so administrative posts should be filled with care A peace-time medical superintendent of a hospital or a M O H is not necessarily a good choice for an E M S hospital The E M S should be a service apart from the ordinary hospital staff and the medical superintendent of a local hospital should stick to his ordinary function of administration and have no say whatsoever in the appointments, or the necessities for, any physician, surgeon or specialist in the E M S As to the number of casualties to be received, this should be mainly the duty of the medical officer in charge of the casualty service at the main control, and no-one—not even the M O H or medical superintendent—should interfere with his decision There can be only one captain at the helm when messages are coming in rapidly and he knows the bed state and areas involved

Secretaries —Why should certain nurses not be taught shorthand ? They would prove invaluable to the doctor as he goes round the wards , alternatively engage some clerical staff Army units should not have any claim to be present in an E M S hospital , if there they must take orders from the doctors

HUMERUS

HYPNOSIS BY HYPNOTICS

SIR,—I was particularly interested in those cases described by Dr Felix Brown (THE LANCET, May 31, p 686) in which Evipan was used as an aid to psychotherapy, for his experience appears to conform to my own (*Ibid*, April 19, p 507) In your annotation on my article (p 514) you wrote "That there are drawbacks and even risks needs no emphasis Psychogenic factors disclosed may be irrelevant or fantastic, the catharsis trivial, the patient's misunderstanding of his illness or his symptoms all the greater , " I cannot agree with these assertions and I would be glad to hear Dr Felix Brown's reply to such criticism In my experience, whatever psychogenic factors are disclosed they are never irrelevant or fantastic, and there is no valid reason why even a trivial catharsis should not provide a dramatic therapeutic success Undoubtedly the patient can be made to misunderstand his illness and symptoms as a result of *bad* psychotherapy, and I am in complete accord that the technique is therefore "not one for indiscriminate use by those without psychiatric training "

Adverse criticism based on hypothetical considerations, unsubstantiated by clinical material, is calculated to restrict or delay the progress of a method which Dr Felix Brown and other workers have apparently found satisfactory Indeed, your observations are to me reminiscent of the attitude which my early work with evipan encountered in the field of psychological medicine

Bentinck Street, W 1 ELLIS STUNGO

MENINGOCOCCI IN THE PHARYNX

SIR,—In your annotation of May 24 (p 671) you say that "Meehan and Merrillees cleared all but 6 out of 75 carriers by a single course of sulphapyridine " This statement is somewhat misleading, especially since you do not mention the doses they employed and go on to refer to Fairbrother's work and quote the amount of sulphapyridine he gave to his carrier cases "a course of 4 g of sulphapyridine daily for 2 days, followed by 3 g daily for 2 days, could generally be relied on to clear the nasopharynx of either group I or group II meningococci " According to your previous annotation (*Lancet*, 1940, 2, 495) Meehan and Merrillees reported on children as follows "Sulphapyridine was then given to all the carriers, in doses of 1 gramme daily per 14 lb of body-weight for five days, and this course was repeated after five days " Taking the children as weighing 4–5 st the doses given would be 8–10 g sulphapyridine daily for 5 days, repeated in 5 days, and would total 80–100 g —a dosage considerable for adults let alone for children, and decidedly larger than that employed by Fairbrother with good results

R M HEGGIE,
Aberdeen J F HEGGIE

ABDOMINAL ANEURYSM AND SYPHILIS

SIR,—Dr Jennings discussing (p 722) the ætiology of aneurysm of the abdominal aorta says, "All the writers who have described long series of cases (Nixon, Bryant, Kampmeier and Osler) agree on the predominance of syphilitic cases " But I can find other long series such as those of Nunneley (1906), Browne (1897), Pepper (1907), Garland (1932), Lucke and Rea (1921 and 1923), Lipshutz and Chadoff (1939)

Since the publication of Bryant (1903) and Osler (1905) much has been learnt about the diagnosis of syphilis Nixon (1911) merely reviewed all the previous literature on the subject and his series (which incidentally amounted to 233 and not 179 as Dr Jennings states) included Bryant's and Osler's Nixon accepted other authors' views as to the ætiology of their cases Twenty of Bryant's cases gave a history of syphilis and this was accepted as proof that the lesion itself was syphilitic The only modern author Dr Jennings quotes is Kampmeier, who from clinical findings, history, serology and post-mortem findings deduced that 39 of his 73 cases were due to syphilis But of 38 of his cases in which post-mortem records are described only 5 had microscopic evidence of aortic syphilis A history of syphilis is not sufficient evidence that the lesion is syphilitic, particularly when, as in Kampmeier's series, many of the patients are negroes in whom the incidence of this infection is high Turnbull (1915) in a series of 175 cases of syphilitic aortitis seen post mortem found only 2 with abdominal aneurysms Coombs (1930) reviewing 103 patients whom he had seen with syphilitic aortitis reported only one abdominal aneurysm, and accepted Garland's opinion that about a third of all cases are due to syphilis Campbell and Bedford (1938) after a fairly comprehensive study of the literature deduced that about 30% of cases of aneurysm of the abdominal aorta are syphilitic

Mitcham M H PAPPWORTH

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VITAMIN C AND FATIGUE

SIR,—I have been reading your stimulating annotatio of March 22 in which you ask for more informatio about the effect of ascorbic acid on muscular efficiency In the Union there is a generally held view that wor precipitates scurvy in an otherwise (apparently) health individual As we showed in our original study, ther is little to support such a view as far as the history o scurvy in the gold mines is concerned, since native engaged in hard work develop the disease neither mor often nor more quickly than those doing lighter work in spite of the fact that most natives yield a very low vitamin-C value in their blood Time and further work will unravel what at present appears to be a somewhat contradictory state of affairs, but my own conclusion is that we seem to need only a small though definite amount of vitamin C every day and that further amounts have little if any effect in improving our diet Our results (published in full in *Proc Transv Mine med Offrs Ass* for March, 1940) will perhaps tend to allay apprehension among those who find that people in Britain cannot now get the more generous ration of C that is available to them in h

Johannesburg

MUSTARD-GAS LESIONS OF THE EYE

SIR,—An instruction E M S I 252 (revised) on the treatment of mustard-gas lesions of the eye has been widely distributed to the officers consultants and hospitals of the E M S It came before the medical board of Moorfields Eye Hospital ' for your information " The board felt that several points in it required comment

1 The use of Albucid solution is advised at first-aid posts and at hospitals in cases in which the eyes have been affected by gas vapour or gas splashing It must be pointed out that the use of sulphanilamide preparations is not directed against gas contamination but only against subsequent infection of the conjunctiva and that opinion as to its efficiency in this latter respect is far from being generally favourable

2 No mention is made in the instruction of the very diverse lesions which may be produced by gas, most of them slight and very few of them serious

3 No indication is given of the treatment necessary when the cornea is definitely involved, and, while water is advised for irrigation of the eye at an incident and at first aid posts, no advice is given as to the lotion to be used for the irrigations recommended at hospitals

It would appear that this instruction is not in fact the ' result of further experience ' and should be withdrawn and replaced by a carefully considered and detailed note based on actual experience obtained in the last war and on substantiated experimental evidence

Royal London Ophthalmic
Hospital

F A JULER
MAURICE WHITING

BLACKCURRANT PREPARATIONS FOR CHILDREN

SIR —For the past six months vitamin C has been supplied to the infants attending the Erith child-welfare clinics in the form of blackcurrant puree This puree was supplied in 8-oz tins Each ounce was guaranteed to contain between 400 and 600 units of vitamin C (20–30 mg of ascorbic acid) it is approximately twice as strong as orange juice which however varies greatly in its vitamin content The puree was used in three large weekly clinics in which attendances averaged 80 per session. Very few children refused it, and of all those seen less than 10 disliked it or seemed at all upset by it In my experience a larger proportion of children refuse orange juice The puree was first given cautiously to children over nine months, and later to younger infants Finally it was used as a routine measure for all infants from the age of two months upwards starting with a few drops three times a day in water and working up gradually to a dosage of half a teaspoon three times a day To lessen the time during which the vitamin was exposed to the air mothers were advised to share tins with their neighbours The puree was used in larger doses with rapid effect on one case of acute scurvy and three of latent scurvy

My object in writing this letter is to record that the puree is tolerated and liked by quite small infants, and that therefore the preparation of black-currant juice for them as you suggest in your annotation of June 7, does not seem to be necessary

Finchley

CECILE ASHER

UNITED STATES OF AMERICA

MILK-BORNE EPIDEMICS

IN his address to the Ohio State University medical school Dr James E Perkins, director of the division of communicable diseases, New York state department of health, related the sum of epidemic disease known to have been milk-borne in the state, exclusive of New York city, in 1917–40 There were 4 outbreaks of bacillary dysentery involving 311 cases , 5 of diphtheria with 123 cases , 25 of scarlet fever with 1466 cases , 30 of septic sore throat with 5138 cases , and 75 of typhoid and paratyphoid fever with 1203 cases In 136 out of these 139 outbreaks the milk-supply was frankly raw Of the 3 remaining outbreaks 2 were due to milk contaminated after pasteurisation and in the third instance, although the milk had been labelled " pasteurised," the evidence clearly indicated it actually had not been so treated The only possible reason for failure to pasteurise milk said Dr Perkins is the excessive cost of treating small supplies Even that reason is rapidly disappearing An apparatus is now on the market which will pasteurise economically 48 quarts at a time

CONSCRIPTION OF MEDICAL STUDENTS

In spite of the acknowledged need for maintaining the supply of doctors no exception is made in favour of medical students in the terms of the Selective Service Act and Congress has refused to amend the act to provide exemptions Various medical bodies have passed resolutions opposing the calling up of medical students and the army has arranged that students graduating this year shall be allowed to take their year of internship before being mobilised The unwillingness of Congress to amend the law arises from the desire to leave to the local draft boards all decision as to who shall be excused A Gallup poll shows that 87% of the population favour allowing medical students to finish their course This suggests that in most cases the local draft boards will take favourable action

MEDICAL CARE FOR THE UNFIT

Concern is expressed in many quarters that the large number of men found unfit for active service should be rehabilitated if possible by appropriate medical care Colonel Kopetzky, who besides being director of the medical division of the Selective Service Administration of the New York city area is also the new president of the Medical Society of the state of New York, has proposed that men with remediable physical defects should be taken into the army and promptly referred to hospitals for curative therapy The American Medical Association has proposed a system which it calls " prehabilitation " under which men will voluntarily submit themselves for examination and if necessary corrective treatment before they are examined for the draft The recognition by the profession that there is a large number of remediable defects which have not been remedied must have an effect on the distribution of medical care, though it is not yet clear what that effect will be All the reformers naturally see an opportunity to promote their particular panaceas and the advocates of compulsory health insurance are by no means silent

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Parliament

Civil Defence

IT was pointed out in the House of Commons last week that civil defence is no longer sticking paper on windows and carrying gas-masks but embraces the whole life of the nation under the blitz We have passed the stage of improvisation, and Lord STRABOLGI in the Lords, and Mr KENNETH LINDSAY in the Commons, urged the establishment of a ministry of civil defence to take over functions now shared by half a dozen departments, and ensure the living and working conditions of the civil population against air-attack The Prime Minister, who had turned the Local Defence Volunteers into the Home Guard, and communal feeding into British Restaurants could now turn the remnants of 6 Government departments, 12 commissioners 315 large local authorities, 1200 smaller authorities, and 3 000 000 men and women into a civilian army under a minister of civil defence Mr Lindsay also pleaded for a simplification of the machinery of the Ministry of Health in all the reception areas of the country Dr HADEN GUEST thought the scope of the proposed ministry should be operational rather than administrative He suggested the appointment of a small committee of the House to be charged with the swift preparation of a plan He did not want to displace local government, but he wished to build a steel frame of civil-defence services within it

From the Government side the proposal for a separate ministry of civil defence met with uncompromising opposition Mr HERBERT MORRISON, home secretary and minister of home security thought that coördination of the kind suggested would lead to chaos Could he, for instance, cut the hospitals and medical administration of the Ministry of Health in two ? There was still an enormous number of illnesses with which Hitler had nothing to do Evacuation and hospital services went to the roots of general public-health administration Dr **Guest** interposed to say that hospital administration was already cut in two The E M S hospitals were run by the Ministry of Health and had an account with the War Department for soldier patients Dr Guest suggested that people injured in air-attacks should likewise be taken in under a national scheme run by the Ministry Mr Morrison retorted that if the Government were to cut off the health and medical functions relating to civil defence from the school and medical services they would soon be faced with strong criticism The same was true of food salvage and distribution and other matters which only affected civil defence in part Mr H V **Willink**, M P and a deputy regional controller, spoke as a well-informed Pooh-Bah, and said we must stir the imagination not of horror but of need Mr **Ernest Brown**, the minister of health, vigorously defended the part which his department played in this " war on the doorstep " They had mobile teams of officers in each region ready to establish advanced headquarters in any town which was badly bombed The House showed a lively interest in billeting problems and agreed with Commander **Stephen King-Hall**, who compared the billeting officer with a cuckoo and said a local bird could not be expected to operate on local nests

Family Allowances

On June 16 the Chancellor of the Exchequer received a deputation of M P s on the question of family allowances He informed them that he would himself conduct an investigation into the practicability and most desirable form of family allowances if the Government should decide to introduce such a scheme The deputation was introduced by Wing-Commander J A C Wright and consisted of Miss Rathbone, Dr Edith Summerskill, Mr C Davies, Sir Francis Fremantle, Mr Lindsay, Mr Parker, and Mr W Roberts

Miss **Rathbone** said that according to the figures given her in Parliament a national scheme of family allowances, at 5*s* for each child under 15, would cost £130 million, if reduced by not duplicating existing forms of allowances, only £60 million per annum The cost could be reduced to less than half by omitting provision for the first child in each family —Sir **Kingsley Wood** said that there must be a greater measure of agreement about such a scheme than at present It would be undesirable to introduce a scheme of this kind without the wholehearted support of the trade-unions No large-scale expenditure would be feasible at the present time without causing the severest budgetary reactions Some might feel that new expenditure amounting to something like £60 million per annum was of small moment in relation to the total of our current expenditure on the war But this would be a permanent annual commitment equivalent on the most favourable assumptions to an extra shilling on the income-tax

QUESTION TIME

Milk Rationing Scheme

Mr H J **Parker** asked the Parliamentary Secretary to the Ministry of Food whether he would revise the Milk Rationing Scheme so as to provide a pint of milk for all children under 16 years of age and a half pint for all adults —Major G **Lloyd George** replied The present restriction scheme requires those consumers who are not in the priority categories to curtail their consumption by a seventh as compared with the quantity purchased during the first week in March Apart from this the scheme does not attempt to regulate liquid milk consumption It would, however, be impossible to ration milk on the basis suggested as the quantity required, assuming that the whole of the ration was taken up, would be 50% in excess of the total milk production of the country at the period of the year when the milk output is at its lowest figure In reply to a further question Major **Lloyd George** added During April the quantity of milk saved by the scheme is estimated to have been 2,300,000 gallons The scheme did not come into operation until April 13

Alien Doctors

Sir **Francis Fremantle** asked the Minister of Health what number of friendly foreign doctors were now on the British Medical Register, whether the promised number of over 100 were being added each week, and how many were now in medical employment —Mr E **Brown** replied The number of doctors, apart from those commissioned in the British or Allied Forces, who have been registered as foreign practitioners under the Medical Register (Temporary Registration) Order, 1941, is 289 All of these are now in medical employment or have such employment which they are free to take up The Central Medical War Committee has sent forward to the security departments the papers of all doctors who have furnished the required particulars, averaging 80 a week in the last 3 weeks

Zone Medical Advisers

In answer to a question Captain H D R **Margesson** stated that in addition to the battalion medical officer arrangements will shortly be made for the appointment in the Home Guard of zone medical advisers with the rank of lieutenant colonel

Protecting the Soldiers' Eyes

Captain **Margesson** also stated that the committee of the Medical Research Council which has been considering the need for additional protection against eye injuries has tested various devices and has recommended that no special vizor in any material is required other than the present anti gas eyeshield

Army Bread

Replying to a question Captain **Margesson** said The present arrangements made by the Royal Army Service Corps for the supply of bread to troops in this country pr vide for the issue of both white and brown bread, the latt being made from wholemeal flour The proportion of brow bread used is about 12% for the Army at home as a whol Arrangements are now being made to change over graduall to the new Government 85% extraction wheatmeal flour

Prison Dietary

In answer to a question Mr **Herbert Morrison** said Cheese is included in the prison dietary, but the allowance cheese or meat does not exceed that allowed under the gener rationing scheme There are normally three meatless days week

Commotional Nervous Shock

Mr F C **Watkins** asked the Minister of Pensions if h would define the term nervous shock of a commotion character, used by his department in connexion with t compensation payable under the Personal Injuries (Civilian Scheme —Sir W **Womersley** replied The term nervo *shock of a commotional* character as used by my departme refers to nervous shock resulting directly from physic violence, including concussion, blast or burial

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Infectious Disease in England and Wales

WEEK ENDED JUNE 7

Notifications —The following cases of infectious diseas were notified during the week smallpox, 0, scarl fever, 962, whooping-cough, 3774, diphtheria, 818 enteric fever, 161, measles (excluding rubella), 11,597 pneumonia (primary or influenzal), 816, puerpera pyrexia, 123, cerebrospinal fever, 244, poliomyeliti 7, polio-encephalitis, 0, *encephalitis lethargica*, 1 dysentery, 114 No case of cholera, plague or typh fever was notified during the week

The number of civilian and service sick in the Infectious Hospita of the London County Council on June 4 was 1814, including scarlet fever, 213, diphtheria 355, measles, 384, whooping coug 431, enteritis 12 chicken pox 83, erysipelas, 58 mumps, 1 poliomyelitis 2, dysentery, 19 cerebrospinal fever, 51, puerper sepsis 10, enteric fevers, 19, *german* measles, 21, other diseas (non infectious), 68 not yet diagnosed, 76

Deaths —In 126 great towns there was no death fro smallpox or scarlet fever, 2 (0) from enteric fever, 21 (from whooping-cough, 9 (1) from measles, 21 (3) fro diphtheria, 43 (3) from diarrhœa and enteritis under years, and 10 (2) from influenza The figures in pare theses are those for *London* itself

Liverpool and West Hartlepool each reported 1 death fro enteric fever There were 4 fatal cases of whooping cough Liverpool, and 3 of diphtheria at *Birmingham* *Nottingham* had deaths from diarrhœa

The number of stillbirths notified during the week wa 187 (corresponding to a rate of 35 per thousand tot births), including 14 in London

Obituary

HARRY EDWARD MANSELL

B M OXFD F R C P.

Dr Mansell, who died, aged 40 at Lambeth Hospital on June 1, was one of the nine children of the late Dr H. R Mansell of Hastings He spent happy years at Oxford where his philosophical outlook was allowed to flourish, and he never tired of talking of the good things and the good people he met there He often spoke with gratitude of the kindness shown to him by Lady Osler He was a true disciple of her husband and, like the master, enjoyed the search into the past to find that some new concept had already been mooted a thousand years ago

Elliott & Fry

Mansell graduated B A. in 1923, and qualified from St George's, his father's hospital, in 1927, obtaining his B M two years later After holding the Wander scholarship at the children's department of the Westminster Hospital, he was appointed resident assistant physician at St George's From there at the beginning of 1934 he went as deputy medical superintendent to the Lambeth Hospital From the outset he showed clinical ability, and apart from his administrative duties he supervised the medical work and looked after all cases of pulmonary tuberculosis until his illness towards the end of 1937 At St George's he had already much experience in the use of the electrocardiogram machine, and when the L C C opened its doors to O'Shaughnessy to perform his surgical work on the heart Mansell was chosen as his colleague The quiet logic and commonsense of Mansell together with the zealous enthusiasm of O'Shaughnessy, promised much in spite of difficulties and they worked well together

Mansell developed many interests outside medicine He was a great reader and his knowledge of furniture, and even of port, was not to be belittled But he was a clinician of the first order and was always logical and neat in his mind

Although he gave considerable thought to health and its preservation, and although he lived a most physiological life he was dogged by ill health and it was sad and strange to see him dying of a natural disease at an early age amid the ruins and devastation produced by the enemy His death is a loss to London medicine for he was a vital link between the old and the new, and between the voluntary hospital and the state-aided service

He leaves two young children and a widow, née Jean Barnes, who was trained as a nurse at Lambeth Hospital

D T D

JOHN WILLIAM CORMACK GUNN

M B EDIN , F R S S AFR

Prof John Gunn died on May 4 in Cape Town, where he was dean of the faculty of medicine and held the chair of pharmacology Born in Kirkwall in 1889, he followed his brother James (now an Oxford don) at the University of Edinburgh where he graduated in arts in 1908 and in medicine in 1912 He held posts in the department of materia medica in Edinburgh and the department of pharmacology in University College, London He served with the R A M C during the last war at Alexandria and on demobilisation took up an appointment as lecturer in pharmacology at Queen's University, Belfast, but the same year he was called to the chair at Cape Town Of the place he won for himself there one of his students now an E M S surgeon writes John Gunn was the ideal professor for the student —high amongst the mountains and yet the most approachable of peaks He let you build your castles in the air and made you feel that your problems were all that concerned the world He understood that the long lecture like the long road is enlivened by the little sprouts of folly With gleaming eyes he would tell the story that makes the pill a pellucid image and not a mere pellet, and with admirable lucidity presented the winnowed facts He showed the utter uselessness of many vaunted drugs and how many of the doses were " about as good as giving the elephant acid drops " He taught the fallacies of the old blunderbuss prescription and would " hae none of them porridge " Life was grand fun to him, a thing to be enjoyed and to be lived, and Poppa Gunn, as his students called him, will be remembered for all time in the hearts of living South Africa

CHARLES WILLIAM LAIRD

M D DUBL , D P H

Dr Charles Laird, consultant tuberculosis officer to the Lancashire county council, died on April 19 at his home at Ormskirk, after a long illness He was born at Belfast in 1879, and after a distinguished career at Trinity College Dublin, he obtained his B A with honours in classics in 1903, and first place at his final M B in 1908 The year before he had already won the Wheeler gold medal at the Royal City of Dublin Hospital for first place in the examination in clinical, theoretical and practical medicine He took his M D in 1911, and the D P H of the University of Liverpool in 1912

After acting as house-surgeon at the Bootle Borough Hospital, he began his real work when he was appointed resident medical officer at the Whiteabbey Sanatorium, Belfast He returned to Bootle to hold for over two years the posts of resident medical officer at the corporation hospital and of assistant medical officer After a further spell of sanatorium work at the Westmorland Sanatorium at Grange-over-Sands, in 1913 he was appointed one of the first consultant tuberculosis officers on the Lancashire county staff and for a time also undertook the duties of tuberculosis officer for Bootle For 28 years Dr Laird was in charge of a district round about Liverpool which contained some 200 000 acres and a population of 350 000 Since 1924 it included the Rufford Pulmonary Hospital, of which he was the visiting medical superintendent, and here he did excellent work especially with artificial pneumothorax and gold treatment

Courteous and cultured Laird set a high standard He never spared himself, and as a reward had the esteem and affection of his colleagues He was a keen golfer, winning many prizes, and as one would expect from an Irishman was an easy and excellent speaker He leaves a widow and two sons, one following in his father's profession

JAMES EDWARD COLLETON ROUSE

M.B LOND , D A , MAJOR R A M C

Major James Rouse, who was killed last month at the age of 38 by enemy air action in the Near East was the only son of the late Dr Algernon Rouse of Worthing James was educated at Brighton College and King's College, London, then followed his grandfather another James Rouse, and his father to St George's, where he qualified in 1925 He held the posts there of house-surgeon, house-physician and resident anæsthetist, and after he joined his father in practice in Worthing he took advantage of the experience in anæsthetics he had gained at St George's His help as an anæsthetist was sought more and more by his professional colleagues, and his natural bent, constant study and increasing practical experience soon gave him a mastery of modern anæsthesia

Although still in general practice in 1936 he obtained the D A for it was his aim to practise exclusively as an anæsthetist His talent in the specialty received official recognition when he was appointed anæsthetist to the Worthing, Hove General and Royal Sussex County hospitals At all these hospitals he rendered valuable service, for he was eager to help with difficult cases at any hour with no thought of his personal convenience

In 1938 Rouse volunteered for service in the R A M C in the event of a national emergency, and he was mobilised on Sept 1, 1939, as a specialist-anæsthetist with the rank of major The second week of his active service found him in France where he served until the day before the enemy occupation of Cherbourg Later he was employed as anæsthetist in various hospitals in the North of England until in January he sailed for the East

There was no more popular man in Worthing and neighbourhood than Jamie Rouse, as the attendance showed at the service to his memory at the Worthing Hospital His life of promise was but half-fulfilled, for his best work still lay before him He married Nancy, daughter of Dr Richard Galway Murray, and she survives him with one daughter

CHRISTOPHER HENRY CONGREVE DENT

M B CAMB , SURGEON-LIEUTENANT, R N V R

Christopher Dent, who was lost when the *Hood* went down, was the younger son of Mr H H C Dent, F R C S , of Wolverhampton He was educated at Marlborough College and Christ College, Cambridge He graduated B A in 1935, obtaining a first-class in part I of the natural sciences tripos, and entered St Mary's with a *university scholarship* the same year He took the Conjoint qualification in 1938 and later in the same year graduated M B with distinction in medicine He had already passed the primary fellowship examination of the Royal College of Surgeons in 1933 at the age of 19 He was appointed house-surgeon at St Mary's Hospital in June, 1939, and was about to sit for the final fellowship when war broke out and he was called up at once as he was already in the R N V R He was proud that he had been appointed to the *Hood*, which he described as the best ship in the fleet Of his term as house physician at Addenbrooke's his chief there writes throughout his appointment Christopher Dent showed initiative, originality of thought, and I gained the impression that he would go far in the medical world And D C L F adds Apart from his brilliant academic distinctions, Dent was a likeable and sociable person, with a quick receptive brain, and had his life been spared he would have made his mark in surgery, on which his heart was set His many friends will mourn his loss as much as the chiefs under whom he served

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Medical News

Royal College of Surgeons of England

At a meeting of the council held on June 12, with Sir Hugh Lett, the president, in the chair, a vote of thanks was given to the American Ambulance for their assistance in conveying specimens from the College to various parts of the country, and also to the Bernhard Baron trustees who have given £40,000 for an endowment of a research professorship at the college

The subject for the Jacksonian prize for 1942 is the methods and results of treatment in cases of paralysis of the bladder following spinal injury The Blane medal for 1941 has been awarded to Surgeon Commander James Callaghan Souter, R N Sir Arthur Smith Woodward and Prof Matthew J Stewart have been elected trustees of the Hunterian collection

Diplomas of Fellowship were granted to the following

C J Gordon, J I C Mason W M Beattie, E G Murphy K E Bond J C Adams W J C Crisp, J S Joly, C P Nicholas A W Stewart, Moss Albert, Ross Bloom, G H Wooler L A Ives O T Mansfield, D V Morse, J A Edwards J D Wade, B E Stanley Hanns Martin Goldberg, E H Travers A J Drew, Katharine I Liebert, L J Temple H L Catchlove, R S Monro H E H Denham, T L Barry R V Blaubaum James Henderson N S Martin Thomas O Neill, F P Raper, A J Slessor, and Eileen M Whapham

A diploma of membership was granted to G K Tutton (Manc) and diplomas in anæsthetics were granted, jointly with the Royal College of Physicians, to the following

Sheila M Anderson S K Bakhshi Helen E M Barnes J T Barr, J D Burrows Margaret M J Conway, D M Dunn Jean L Edwards, Mark Garden, W W Gilford, H C R Gunter, C Hawkins, Franz Hoenigsberger, John Ives, H R Marrett G Panton, Charles Reid, Kenneth Roberts, Margaret J Rowl H J A Simmons, J M Smith and K B Thomas

The following examiners were elected for the ensuing yea

Dental Surgery—Surgical Section Mr E G Slesinger, Reginald Vick, Mr J Basil Hume, Mr L E C Norbury, Mr A MacLeod and Mr A J Gardham

Primary Fellowship—Anatomy Prof F Wood Jones, F R Mr A M A. Moore, Surgeon Rear Admiral G Gordon Taylor a Dr A J E Cave Physiology Prof D T Harris Prof A G J Huggett, Prof H P Gilding, Prof R J S McDowall

Diploma of L R C P , M R C S—Elementary biology Wilfrid Rushton, D Sc , Dr E I Jones, Prof T J Evans, F R and Mr C C Hentschel Anatomy Prof W J Hamilt Prof A B Appleton, and Mr James Whillis Physiology Pr D T Harris and Prof Hamilton Hartridge, F R S Midwifer Mr J St G Wilson, Mr Leslie Williams, Mr G F Gibberd a Dr A J Wrigley Pathology Mr D H Patey, Prof W Newcomb, Mr R M Handfield Jones and Dr E ffolliott Creed

Diploma in Public Health —Part I Prof John Eyre Part Dr Charles Porter

Diploma in Tropical Medicine and Hygiene —Sir Philip Mans Bahr and Prof R B Hawes

Diploma in Ophthalmic Medicine and Surgery —Part I Frank Law and Mr L H Savin Part II Mr Adrian Caddy

Diploma in Psychological Medicine —Surgeon Captain M donald Critchley

Diploma in Laryngology and Otology —Part I Mr Norm Jory and Mr Terence Cawthorne Part II Mr Edward Car Shaw

Diploma in Medical Radiology —Part I Dr H T Flint P II Mr G F Stebbing

Diploma in Anæsthetics —Dr A S Daly

Diploma in Child Health —Dr Alan Moncrieff and Dr Charl Harris

University of Wales

At recent examinations at the Welsh National School Medicine, the following were successful —

FINAL EXAMINATION FOR M B , CH B

Medicine —N E France, Vera Harris, Margaret W Hugh D F V Johnston, W M Jones, Gwenllian M Lewis, John Lew Monica Parry Morton D K W Picken, J B Randell, H I R Nest G Richards Barbara C Roberts Erica M G H Rober J H Stranger, E R Treasure, Glenys J Wade, John Willia Olwyn Williams, G A Wright

Rolleston Prize

The next award of this prize, now worth about £100, w be made in Trinity term, 1942, and graduates or resear students of the Universities of Oxford and Cambridge w have not been qualified for more than six years or matric lated for more than ten are eligible The prize is given f original research in animal and vegetable morpholog physiology and pathology, or anthropology, and essa should be sent to the assistant registrar at the Univers Registry, Oxford, before March 31, 1942

The Air Ministry have appointed Dr T F Macrae a Squadron Leader W P Stamm as biochemist and special medical officer to watch over the food supplied to the R A Dr Macrae, who will also hold the temporary rank of squadro leader, is biochemist to the division of nutrition of the List Institute He will analyse the food and watch for a possible deficiency, while Squadron Leader Stamm, w joined the medical branch of the Air Force in 1934, will ke a look out for signs of food deficiency in the health of the me Both will study the preparation and cooking of the fo and superintend the planning of a balanced ration and t prevention of waste

The Association of Special Libraries and Informati Bureaux is undertaking a national survey of enemy a enemy controlled publications, especially the current issu of periodicals Previous exploratory surveys have confirm the impression that since the early part of 1940 only limit supplies have been arriving in this country, consisting imperfect sets of a few periodicals largely restricted to depar mental libraries not accessible to the general public Throu the good offices of the Royal Society, the Rockefeller Found tion has now provided funds for extensive survey which committee of the association is hoping to complete by t autumn A memorandum is being circulated to some t thousand institutions and individuals to ascertain wh publications they need and the extent to which they a available Those who are interested and do not receive copy of the memorandum should notify the committee 31, Museum Street, London, W 1

Resident doctors, medical students and hospital nur will be able to obtain their uniforms coupon free T Board of Trade is allowing hospitals to issue certificat stating that the goods are needed for use in a hospital A fr issue of outdoor uniform is also being made to members the Civil Nursing Reserve

Trinity College, Dublin

Dr R A Q O'Meara has been elected to a fellowship of the college where he is at present acting as professor of bacteriology

Medical Association of Eire

At a meeting of the Irish Free State Medical Union held on June 5, with Dr D F MacCarthy, the president, in the chair a resolution was passed to change its name to "The Medical Association of Eire (Eire Medical Association and British Medical Association)," with its equivalent in Gaelic as an alternative The change has to be confirmed at another meeting which it is intended to hold before the end of the month Dr MacCarthy was re elected as president and Dr J P Shanley as vice president A long discussion took place on the remuneration for immunisation against diphtheria For several years past there has been disagreement between the union and the department of local government and public health on the fees to be paid by the local authorities for this work and some months ago a provisional agreement was reached, but difficulties have arisen.

The trustees of the Lady Tata memorial fund have awarded the following grants for research in blood diseases, with special reference to leukæmia

Grants for research expenses Dr J Furth (New York) Dr P A Gorer (London), and Dr A H T Robb Smith (Oxford)

Part time personal grant and grant for research expenses Dr Warner Jacobson (Cambridge)

The annual meeting of the Royal Society of Medicine will be held on July 1, at 5 P M, and the general meeting of fellows at the same time on July 15 On Tuesday, June 24, at 4.30 P.M, Dr Eliot Slater will read a paper to the section of psychiatry on amnesic syndromes in war The section of urology will hold a clinico pathological meeting on June 26, at 5 P M, and the section of orthopædics will meet at 2 P.M, on June 28, at Park Prewett Hospital, Basingstoke, for short papers and demonstrations

A meeting of the Shaftesbury Military Hospital Medical Society will be held on Tuesday, June 24, at 3 P.M, at which Major J C Thomas, R.A M C will read a paper on the control of air borne infections in hospital wards

The Rhodes trustees have awarded a scholarship in ophthalmology to Dr K A Abayomi of Lagos, Nigeria, who is at present studying at the Royal Ophthalmic Hospital (Moorfields) Dr Abayomi is a graduate of Edinburgh University

Group Captain H A Hewat, M B Edin has been promoted to the rank of temporary air-commodore

The D S O has been awarded to Surgeon Commander J J Keevill, M D Camb, R N, H M S *Illustrious*, for distinguished services during the withdrawal from Greece

The British Medical Students Association will hold a council meeting at Cambridge, on July 5 and 6, when Dr J Trueta will speak on the history of war surgery, and Dr K. W C Sinclair-Loutit on A R P and students There will also be a discussion on the recommendation on medical education to be made to the Medical Planning Commission in response to the invitation of Mr H S Souttar, the chairman Further particulars may be had from 3, King's Parade, Cambridge

The regulations governing the employment of alien doctors in hospitals lay down that they should not exceed 10% of the staff (or 20% in hospitals of less than 100 beds) The Minister of Health now announces (circular 2405) in calculating this proportion the visiting medical staff of the hospital may be included Also where a hospital employs at least two resident doctors of British nationality it will be permissible to employ one doctor of enemy nationality even though the total medical staff may be less than five (in a hospital with less than 100 beds) or 10 (in a hospital with 100 beds or over)

The office and laboratory of the BRITISH PHARMACOPŒIA COMMISSION have been transferred to University College Hospital medical school, University Street, Gower Street, London, W C 1

SILAGE —The portable types of silos mentioned in an annotation last week (p 761) are made of wire mesh lined with special paper They are fairly cheap and materials for their construction are still available They can be filled in the same field in which the silage is to be fed the following winter thus saving labour in carting Last season many farmers displayed ingenuity in home-made silos which gave excellent results

Public Health

Tuberculosis and the War

IT seems that almost from the start of the present war, as in the last one mortality from tuberculosis began to rise The definite increase in the winter of 1939–40 was officially ascribed at least in part to the exceptional winter conditions This cannot yet be tested in England and Wales since there are no figures available subsequent to June 1940 but figures for Scotland (given in quarterly returns) show that the total deaths from tuberculosis both in the third and fourth quarters of 1940 also exceeded those in the corresponding quarters of 1939 For the whole of 1940 the tuberculosis deaths for Scotland number 4003 (2155 males, 1848 females) as against 3526 (1917 males, 1609 females) in 1939 and an average of 3586 for the preceding five years This is an increase of 12% for males and 15% for females The excess has been greatest for the younger ages The death *rate* from tuberculosis in Scotland which had been falling in pre-war years returned in 1940 almost to its 1932 level These danger signals indicate the necessity for planned and efficient action directed to prevention and to early diagnosis and prompt treatment, for we cannot afford to neglect the lesson of the last war In considering action it is significant that the improved standard of living in 1939 over that of the previous generation in 1914 would not seem to be affording protection from another war-time rise in tuberculosis mortality.

From the Annual Reports

MANCHESTER

Manchester is one of the few education authorities whose medical officer is not the local medical officer of health nor directly connected with him This arrangement is not favoured by the Board of Education or the Ministry of Health as it divorces school medicine from child welfare, but the officers who have held these posts have been the chief developers of the school service Among the most prominent of them is Dr. Henry Herd who retired from Manchester two years ago Manchester was an evacuation area and arranged from the first for the staff of the school medical service to assist in the reception areas where its services were required In his report for 1939 Dr J G Woolham mentions the difficulties of billeting children with lousy heads or enuresis He also notes the impression that evacuated children improved in health and nutrition, but draws attention to the dangers of this impression and calls for facts Dr. Cheesman has reported on the effects of transference of children from town to a rural area in our columns (1940 2, 575), but more evidence should be collected without bias, so that it can be evaluated when we have time The results will throw light on the rearing of children When the schools in Manchester were reopened on a voluntary basis after the evacuation the state of cleanliness of those children who did attend school was good but an exploration among the children who kept away showed 25% of them to be verminous and 20% to have untreated minor ailments The child-guidance clinic of Manchester started early and is progressing, though the war has interfered with it The I Q 's of 76 children referred to the clinic were · 7 below 70, 15 from 70 to 90 39 from 90 to 110 and 15 above 110 Child guidance deals mainly with emotional disturbances and is not directly concerned with intellectual defects The influence of the war on child behaviour requires study, for it is unknown and unpredictable At the orthopædic clinic, only 32 rickety deformities were seen among 148 cases The elimination of crippling due to rickets is one of the most remarkable benefits of the past quarter of a century for though minor rickets is still not uncommon in our cities the graver forms have gone Crippling from joint and bone tuberculosis is also decreasing rapidly, as much from improved treatment as from fall in incidence On the other hand, spastic paraplegia is either increasing in incidence or is more often detected, at all events in the residential school for cripples 36 out of 113 children were the subjects of spastic paraplegia

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A meeting of the Medico-Legal Society will be held at 26, Portland Place, London, W 1, on Thursday, June 26, at 5 P M when Dr Donald Blair will read a paper on alcoholism.

Notes, Comments and Abstracts

CLINICS FOR RECEPTION AREAS

Mr JOHN AUDRIC, headmaster of Brockham Green School, Surrey, writes Organised evacuation is a necessary result of enemy attack, but private evacuation has gone side by side with it, and has now assumed serious proportions—serious because since it is done privately it escapes the official eye Thus large towns, which in pre-war days had a child population filling to capacity as many as ten or more large elementary schools, are left with only a quarter of the original number The rest have been dispersed, either privately or officially, many miles away They have entered the schools in the rural areas, and the result has been that many of these are crowded , some actually have waiting lists Such schools were not constructed to take the large number of children who now receive full-time instruction within them Apart from the fact that the classrooms are too small to meet the increased roll, the playgrounds are overcrowded, and the number of lavatories and drinking fountains are not up to the minimum required by regulation True, great progress has been made in catering for the children's education, but there has not been the same advance on the medical side Town children are accustomed to a well appointed, efficiently staffed clinic within easy reach of their school Their parents are likewise accustomed to finding it within easy reach of their homes They could take their children to the clinic, and discuss the various ailments with the nurses This care has now fallen on the householders and helpers a rural area with a child population corresponding to the former child population of the town does not boast a clinic It did not have one before, and the powers that be are moving very slowly in that direction, although the need is urgent Rural areas are often grouped around a town with a clinic, which thus acts as the centre This would not be so bad if there were reasonable transport facilities, but these, unhappily, do not exist Householders, helpers, or representatives of care committees have to rely upon an hourly bus service which will take them, provided there is room Thus a whole morning is spent upon an errand which should only take a fraction of the time

An abnormal child population in a small area offers an easy target for epidemics The shortage of doctors is known and deplored, but there must be a goodly number of trained nurses now available from the evacuated areas, and there is in every village a hall, reading-room, or even accommodation in private houses where a clinic could be established The health of the children would thus receive the necessary protection and they and their guardians would be spared a journey which in the present circumstances they should not be expected to make

CALLING UP THE PHARMACIST —Mr Hugh Linstead, Ph C , secretary of the Central Pharmaceutical War Committee, asks us to state that dispensers who wish to secure deferment of their call-up must apply to the secretary of the Ministry of Health, division 1 B, not later than July 1

Births, Marriages and Deaths

BIRTHS

CONDON —On June 12 at Poona the wife of Lieut Colonel G F Condon, I M S —a daughter

MARRIAGES

BARBER—HAIGH —On June 11 at Chalfont St Peter Harold Stuart Barber, M D , squadron leader, R A F O to Isobel Mary Haigh

GARDNER—ADDISON SCOTT —On June 12, at Cupar Arthur Miller Gardner, M B captain, R A M C , to Janet Isobel Addison Scott

WALCH—MACRAE —On May 17 at Hampstead, Roger Charles Walch M R C S to Ruth Margaret MacRae

WILSON—MANGER —On June 10, at Sandford Orcas William Wilson, M B , captain, R A M C to Elizabeth Manger

DEATHS

LIGHTWOOD —On June 16, at Sidmouth, Edward Eric Lightwood M D Lond , aged 47

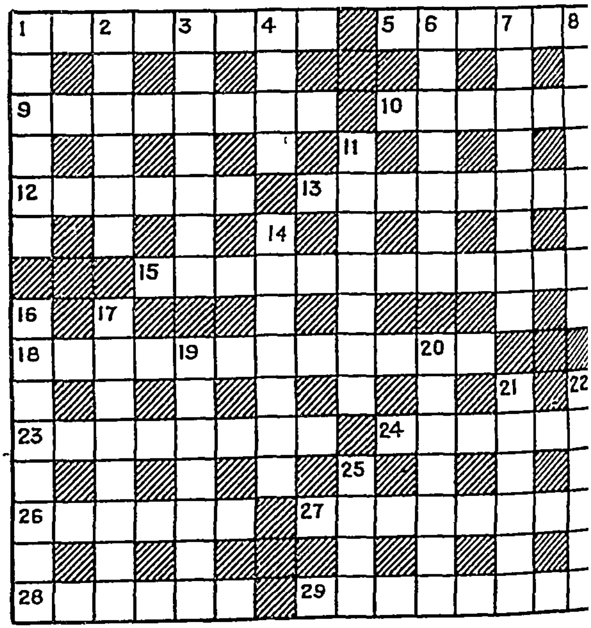
STEELE —On June 13, William Kenneth Steele M R C S lieut colonel R A M C (S R) of Springfield, Devizes aged 76

TWYNAM —On June 13, at Flackwell Heath, Bucks, George Edward Twynam, M R C S , aged 85

THE ELEMENTS OF PHYSIOLOGY

THANKS to the publication of small books on th subject there is no longer any excuse for abysm ignorance of physiology "How the Body Works (Longmans, Green and Co Pp 64 2*s*) is a tal simply told in a dozen short chapters and in languag well within the mental compass of an intelligent te year-old In this little book, which is quite free fro technical jargon, Dr L S Michaelis explains th physiology of reproduction neatly and unsentimentall and makes a clear distinction between the mind and th brain It is profusely illustrated by Kupfer Sac with sketches showing the frequent similarity betwe physiological and mechanical devices, contains a excellent radiogram of the chest, and the now inevitab appendix on first-aid treatment Normal children ca hardly fail to be interested in its contents

LANCET CROSSWORD



ACROSS

1 The Grecian bend (8)
5 A Slav company makes this anthrax serum (6)
9 Look again ? (8)
10 Dad's part is his word (6)
12 Nymph or errant annelid, she prefers salt water (6)
13 If it is, you can eat it (8)
15 Invisible, intangible, it reaps no R I P (12)
18 Would this describe the Revised Version ? (12)
23 As salt (8)
24 Only a theory (6)
26 The bottom one is generally reckoned a safe bet (6)
27 Too much of a good thing (8)
28 Our peripatetic correspondent (6)
29 Postnasal sentinels with a stuffy reputation (8)

DOWN

1 Lack of it leaves peo speechless (6)
2 "Rickety, rickety, ——, Why didn't they give vitamin D ?" (6)
3 Iridescent (7)
4 A ticklish problem (4)
6 Not what the transfus expert fancies (7)
7 There are balder ways describing it (8)
8 One voter is harmonic (8)
11 Pain, sir ? Try this (7)
14 Military guards (7)
16 Do they use a White Star steer her by ? (8)
17 Twice fifty, twice five, ala an anatomist for all that (
19 Every 16 has a high one (
20 Rennet nothing ! It s t whole digestive tract (7)
21 Mobile 6 (6)
22 Any way in (6)
25 Serum with an appetite f work (4)

Appointments

ALLAN K B , M B Durh M O to the Daimler Co (Aero Engine
BARFORD, J L M R C S , D P M temp asst M O for Surrey
BURTON HAROLD B M Oxfd, D R C O G deputy R M O
London Road Hospital Stoke on Trent
CAMERON, F P , M D Manitoba, F R C S E R S O at St John
Hospital, Lewisham
COLLINS JOHN, M B Lpool asst M O H and asst school M O f
Blackpool
HART KATHLEEN, M D Lond , D P H asst M O H and as
school M O for Edmonton
NICOL, C G M M B Lond , D P H M O H for Mirfield
STRAHAN, J H M B Belf D P H D T M & H malar
Federated Malay States
research officer, Federated Malay States
WADSWORTH, G R M B Lpool M O Gold Coast

ORIGINAL ARTICLES

CUTANEOUS ANTHRAX

BY ALBERT E. HODGSON, M.D. Edin., D.P.H.
MEDICAL SUPERINTENDENT OF THE CITY HOSPITALS, FAZAKERLEY, LIVERPOOL

THIS article covers a series of 93 cases of anthrax all of which have been treated with serum without surgical excision of the lesion. The first 52 received large intravenous doses of serum only; 6 patients, 4 of whom arrived almost hopelessly toxic, died. The remaining 41 were given Neokharsivan as well as serum intravenously and of these none died, though many were gravely ill when admitted to hospital.

EXPOSURE TO INFECTION

Anthrax is not a common disease, but it is none the less a danger wherever dust from foreign hides or hair ("wool," to give the latter its trade name) and occasionally live cattle are handled. Infection may be direct from cattle but most often is indirectly conveyed by infected dust. The spores of *Bacillus anthracis* are notoriously resistant and may remain viable for months and years. Some millions of dry hides and many tons of wool enter Britain by the Mersey each year from abroad, and consequently spore-infected dust in a ship's hold or in bales of hides or dockside sheds or tanneries is an ever-present danger to all who work there. Since imported wool has been treated at the Government wool disinfecting station at Liverpool the risk has been considerably lessened. Once only have I had a case directly infected from a carcase, the others (3 excepted) being dock labourers, carters, or wool-factory or tannery hands. The 3 exceptions—a baby aged 15 months whose father worked in a tannery and 2 housewives whose husbands were a dock labourer and a tannery operative—were presumably infected by the dust carried in the clothes of their relatives.

The occasion of infection cannot always be fixed with certainty, and this fact, since anthrax is an accident, may cause difficulty where liability for compensation is contested in court; the balance must be swayed by probability in such cases. For the same reason a precise incubation period is difficult to assess, but it is usually accepted as 1–3 days, or "from a few hours to a few days."

Of my cases, 2 suggest that some degree of immunity follows an attack of anthrax.

One was a veterinary surgeon who had three vesicular foci on the left forearm; there was little œdema, and at first glance the lesions were not unlike impetigo, but anthrax bacilli were found in the vesicles. He had had anthrax, bacteriologically verified, 3 years previously, and a scar supported his claim; two small injections of serum rapidly cleared the infection. The other case was a teak buyer recently home from abroad. He had an uninflamed vesicular lesion on the back of his neck; the fluid was brown and contained unidentified bacilli. He had had anthrax 5 months previously in Beirut, where he was treated with serum and the focus was excised; the illness was very severe. He had a second attack 6 weeks later which was treated in like fashion in the same hospital; on this occasion, the inflammation and illness were much less severe and quickly subsided. He showed the two scars. The third illness which I saw was trivial.

DIAGNOSIS

The clinical diagnosis of typical cutaneous anthrax is usually easy. Infection takes place as a rule about the neck, face, wrists and forearms where dusty garments or infected fingers rub, but there may be no visible cut or breach of the skin; in most cases the patient's occupation is a significant pointer. The circumscribed ring of angry vesicles filled with clear yellow or sanious fluid, the brown or purplish central necrotic area and the widely extended inflammatory œdema and induration form a characteristic picture of fully developed anthrax (fig. 1). Pain is surprisingly slight and fever may not be high; pus is never present. In my view, the presence of pus at this stage is against a diagnosis of anthrax unless the infection has been implanted on a pre-existing purulent condition. This, indeed, had happened in one of my cases—a wool machinist with an old facial impetigo which she had no doubt infected with a dusty hand. If infection is located within or near the anterior cervical triangle, dysphagia, dysphonia and—an ominous sign—dyspnœa become increasingly evident. Moreover instead of showing the localised and circularly set vesicles, the eruption may occasionally be diffused over an area of 2–3 in. each way (fig. 3). In the early nodular stage, visual recognition may not be possible with certainty; in 12–24 hours or so, the development of vesicles and rapid swelling will make diagnosis easier.

A swab from the vesicle fluid usually shows the anthrax bacillus on a simple or gram-stained film and later on culture. A direct film may disclose large numbers of the bacilli but often only an odd one is found, and that after much search; in other cases laboratory confirmation can be obtained only by culture or animal inoculation. In films the square-ended bacillus is sometimes much shorter than is pictured in books. Before vesicles have formed, scarification and kneading of the papule will produce exudate from which a swab may be taken.

Accidental vaccinia can present a picture which at first sight very closely resembles that of anthrax. Two such inoculations, in one case on the chin (fig. 2) and the other on the left temple, came to me notified as anthrax. Careful investigation and the clinical course of the case ultimately clarified the diagnosis.

TREATMENT

When conditions justify reasonable suspicion treatment should not be delayed for final proof. There is no laboratory evidence that anthrax serum has prophylactic virtue but I recommend that 5–20 c.cm. be injected intramuscularly in any circumstances where infection might have taken place.* It is an entirely empirical procedure, but I have carried it out in 37 instances where farmers and animal slaughterers have with abraded hands, handled carcases dead of verified anthrax and none of them developed the disease. It can do no harm and may do good.

In an established case serum in large doses with neokharsivan are given together intravenously by gravity. An ordinary funnel and tube apparatus with a No. 18 serum needle is used and a vein in the elbow flexure is usually chosen. All apparatus as well as the saline solution, serum and neokharsivan dissolved in saline, is kept at blood-heat; the flow is started with pure saline and serum is added gradually until finally serum only is passing. The dissolved neokharsivan is then added. It is my rule at this stage also to add adrenaline, ♏ 5–8, to avert or minimise any liability to anaphylaxis. The injection is made slowly and takes about 10–15 min. according to the bulk of fluid given. Usually towards the end of the injection the patient complains of a feeling of heat and throbbing in the head, or a sensation of faintness or nausea, but a word of explanation will generally reassure him. When the injection is completed, hot bottles are placed near him in goodly numbers, for rigors almost invariably occur within half an hour or so. Adrenaline, if not already given, should be injected hypodermically, and a drink of brandy and warm water or a cup of strong tea will help. The rigors need cause no undue alarm; they are worst after the first injection, and decrease in severity with succeeding ones. Watch must be kept for true anaphylactic signs. Strictly, by a slow process of fractional injections, desensitisation should always be essayed, but in facing so rapidly progressive a disease, time is vital and risk must be taken. Should respiratory or cardiac failure threaten, the injection must be stopped. After a few hours, by slow and careful approach, it must be tried again, and often it succeeds; indeed perseverance here can save life. Dosage at 24-hour intervals, is:

First day: 100–250 c.cm. serum according to severity, with 0.3 mg. neokharsivan; in very urgent cases (front of neck with even slight dyspnœa), 300 c.cm. or more.

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* A reliable serum is essential, and for many years I have used that of Messrs. Mulford (Sharp and Dohme) with complete satisfaction.

Second day repeat serum
Third day repeat serum plus 0 45 mg neokharsivan
Fourth day repeat serum
Fifth day repeat serum plus 0 3 mg neokharsivan In toxic or dyspnœic cases, give an extra second injection 12 hours or less after the first

The mildest (i e , distally placed) infections may need only one injection, an average case generally needing two or three, but dangerously sited or resistant lesions may require five or even more In these last, should a precocious serum rash appear, I discontinue serum but continue with arsenic if desirable

My most critical case which recovered received in seven injections during 6 days a total of 2265 c cm of serum She was pastily toxic and came late under treatment The lesion, only the size of a shilling, was just below the angle of the jaw, but the œdema spread from the temple to below the nipple, and dyspnœa and dysphonia were present In another severe case, a man directly infected from a cow dead of anthrax, the focus was near the thyroid cartilage, and the advance was rapid He needed six injections in 4 days, aggregating 1860 c cm to check the process

These 2 cases were in the pre-arsenical series , with adjuvant neokharsivan they would doubtless have reacted to less serum Response to treatment, in moderate and severe cases, shows itself in a slowing of the local inflammation and swelling and slight amelioration of dyspnœa , the temperature, if raised, tends to fall Save in mild conditions, this improvement is not to be expected before 36–48 hours If treatment has been ample the improvement continues, but the outlook darkens quickly if the arrest of symptoms is delayed Occasionally, even in moderate cases on or about the 3rd day, when things seemingly are going well, there is a sudden exacerbation of inflammation , I have met this several times and have had to give increased serum quickly to counter it In ordinary circumstances, once improvement is firmly begun progress is rapid The vesicles shrivel and dry and symptoms abate The gangrenous patch shows suppuration underneath and in 7–10 days separates, to leave a shallow granulating ulcer If local sepsis causes trouble, sulphonamides help in clearing it up

Local treatment, from the beginning, consists of thick warm eusol fomentations applied widely and often to the focus and the inflamed area A brisk purge at the outset undoubtedly helps , I give pil colocynth co gr 1 with calomel gr 3 It sounds drastic, but in fact is not, resulting in only one effective action with little or no tenesmus

There is almost invariably a serum rash, only 7 escaping in these 93 cases The ulcer heals well as a rule, a shallow scarcely noticeable scar remaining In uncomplicated cases, anthrax leaves no permanent disability

The use of arsenicals without serum has been recommended by some observers, but my experience does not support this I have tried neokharsivan alone on four occasions, but each time the advance of infection quickly outpaced my efforts, and only by prompt and massive serum injections was the onrush stemmed That arsenic has a specific action in anthrax was demonstrated by Ehrlich and has since been amply proved (Eurich 1930, Brentnall 1930) Pijper (1918) and others in South Africa and Couparoussos (1930) in Macedonia control the disease solely with an arsenical Couparoussos publishes photographs of cases which recovered showing lesions of a degree which, in my view, would be hopeless in this country I suggest that geography may influence either the virulence of the organism or the immunity of the population In this country arsenic should be regarded in my opinion as a highly powerful but nevertheless ancillary aid to serum therapy, and its use alone should be limited to the mildest and most distally located infections or to circumstances where anthrax serum is not accessible

Sulphapyridine has been used recently in conjunction with serum and arsenic in 2 cases by Bonnar (1940) and the sulphapyridine group have also been the subject of valuable laboratory research by Cruickshank (1939) and May and Buck (1939)

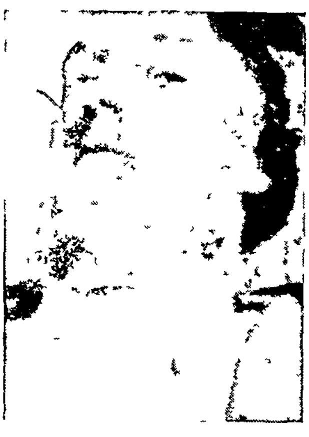

FIG 1—Localised type of lesion with swelling of cheek and across neck and chest

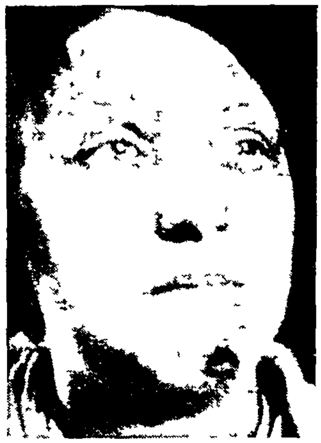

FIG 2—Accidental vaccinia

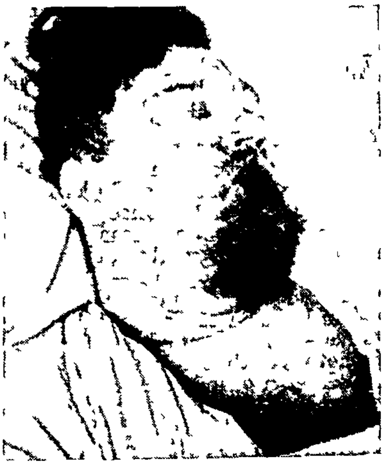

FIG 3—Diffuse type of anthrax with œdema from temple to nipple level

COMPLICATIONS

Toxæmia may develop wherever the lesion is situated, but it develops most often in infections above the shoulder level , the size of the focus does not seem to affect it The rate of onset varies considerably in different patients The day of disease at which treatment begins is vital in all cases Even when mildly toxic, the patient looks pale and poisoned The temperature is normal or only slightly raised, and lassitude is present Nausea, vomiting, subnormal temperature, a weak and irregular pulse, and muscular weakness are ominous signs , there may be slight delirium, but this is not invariably present When death occurs, it is usually by sudden unheralded syncope Roughly speaking, up to the 3rd day of disease treatment offers a chance of recovery, but danger rapidly increases afterwards in all but mild cases By boldly persevering with injections, as already indicated, success can be attained even in cases which appear to be extremely toxic Incidentally, collapse of the venous walls, often found in these toxic patients, may make introduction of the serum needle difficult

Laryngeal œdema with dyspnœa in a varying degree is manifest in all cases where infection has taken place in or near the anterior cervical triangle The swelling in anthrax is not purely superficial but penetrates into the deeper tissues, and the coincident induration makes local treatment almost ineffective Early and repeated injection of serum and arsenical is urgently required, and the presence of even slight swelling causing dyspnœa, dysphonia and dysphagia should be regarded as a grave sign If relief is not given the patient slowly suffocates I have tried local cupping, scarification, and once leeches, without effect The deep and widely penetrating induration prevent relief by tracheotomy As in

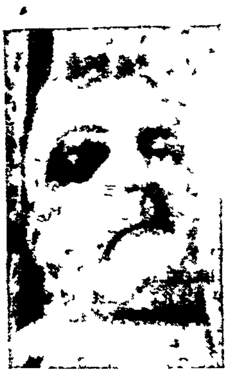

FIG 4—Dark area of necrotic tissue left when acute inflammation had subsided

toxæmia, vigorous intravenous therapy must be the main line of attack

Local gangrene, which may result in extension or deep ulceration, is prone to follow severe inflammation where induration has been pronounced and has interfered with the vascularity of the part This is especially liable to happen below the jaw and in the peri-orbital area The immediate danger of septic absorption may call for sulphonamides, which I have found of much value, but later cicatrisation may necessitate surgical measures to prevent permanent deformity

One patient with a diffuse lesion measuring 3 in by 4 in just above the left elbow, was not able, on recovery, to extend her arm more than half way as a result of contracture, until surgically treated Two patients, infected on the eyelids, later required plastic operation for the same reason In one the scar near the outer canthus pulled the eyelids outwards and seriously limited their mobility The other was much more severe, both lids of the eye were deeply necrosed (fig 4) and on healing the scar produced complete double ectropion Two skin graft operations were performed with a very satisfactory result Another patient whose lesion was on the temple suffered from severe local neuralgia, doubtless from involvement of the nerve in the scar tissue, this passed off after a few weeks without any interference

Another complication of a psychological nature may be met with, and apart from the effect on the individual patient may cause difficulty in assessing the ability of the patient to return to work, especially if the question comes to court As recovery proceeds the patient develops an increasing fear of another attack, this ultimately becomes a fixed anxiety state, which no reasoning, however kindly, will dispel On four occasions, patients comfortably placed in permanent jobs, despairingly gave them up because of fear

The strictest care must be taken by those attending cases of anthrax Gloves should be worn by everyone concerned, and all dressings must be burnt Old bedclothes, linen and mattresses should be used so that they too can subsequently be destroyed by incineration After three consecutive negative wound-swabs the case may be regarded as non-infectious, the first negative swab usually being obtainable at the end of a week or so

Successful treatment hinges on two factors. the day on which the diagnosis was made and treatment begun; and the site of the infection Up to the 3rd day, in the average case, treatment gives a reasonable chance of recovery, but with further delay this rapidly diminishes if toxæmia supervenes The nearer the midline of the neck that infection occurs the greater is the danger of grave respiratory involvement To help in the early recognition of anthrax the medical officer of health has had posters displayed in and about dock sheds and tanneries in Liverpool, urging anyone with a suspicious pimple, however trivial, to have it immediately seen at the nearest hospital or at the City Hospital, Fazakerley In the past 11 years, 294 persons have attended here on such grounds, most of them suffered from simple pustules, boils and the like, but 12 proved to be anthrax and received prompt treatment in consequence

SUMMARY

A series of 93 cases of cutaneous anthrax have been treated without surgical excision of the lesion Of 52 which were given serum only, 6 died, the remaining 41 received serum together with neokharsivan, and of these none died

In this country, an arsenical should be regarded solely as an adjuvant to serum therapy, and only in the mildest cases where infection is favourably located, or where serum is not available, is its use alone to be recommended

Early recognition and treatment are essential to recovery In doubtful cases pending bacteriological confirmation, or in circumstances where infection might possibly have taken place, a small amount of serum should be given intramuscularly

I am grateful to my colleagues Dr Elsie Burns Connolly and Dr Louise Connolly, who between them have helped me throughout almost the whole of this series of cases

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EFFORT SYNDROME

BY

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EFFORT syndrome is a diagnosis seldom used in normal times, but in war-time it is found convenient to classify many cases under this heading The following study is based on more than 200 soldiers, so diagnosed, admitted during 12 months to an emergency hospital which is a centre for the treatment of effort syndrome

The inquiry has been directed to the phenomena, the mechanisms at work in producing them, the external (environmental) causes, remote or recent, which have set these mechanisms in action, and the internal (constitutional) causes which have enabled external causes to act thus Prognosis and treatment have also been considered Physiological and psychological data, collected in the course of a more restricted and detailed investigation, are not included here

THE PHENOMENA

The phenomena are partly inherent in the criteria of diagnosis, briefly they are the symptoms of excessive effort But not all the phenomena are so specified. many observers hold, for instance, that pain over the left breast is not a symptom of effort, yet it is common in this disorder It is true however that they are the symptoms of effort or emotion in the given patient The physical phenomena of the disorder have often been fully described because of the need to differentiate it from cardiac and other diseases and the large part cardiologists have played in its study We have nothing to add on this score to the description in the 1918 Report of the Medical Research Committee, and our cases exhibited the features there described

The subjective or obviously psychological phenomena, which are chiefly those of emotion, have received relatively little attention In our series we inquired into the mood and the outlook of each man 76% reported conscious fear accompanying their symptoms at times; 72% had attacks, occurring while they were at rest, which corresponded in form to the familiar anxiety attack. Fear during the attack might be of falling, fainting or dying, or might be vague and without any recognised object Half had fairly severe depression at times during their illness.

The frequent air-raids in the London area during the late autumn and the winter produced an experimental situation of which we took advantage 31 patients were exposed to a frightening situation by being brought from the comparative safety of their shelters to an upstairs clinic during night raids, and were then questioned about their feelings Many of them had been reluctant to come upstairs, 21 of them indicated that the symptoms they experienced during air-raids were essentially the same as those of their illness, they described palpitation, tightness in the chest, a choking sensation and so on, but it was noteworthy that there was seldom any concomitant physiological disturbance, thus only 10 had a pulse-rate over 90, and the highest rate recorded was 120 Only 2 patients denied any symptoms as a result of fear during air-raids, 4 were indefinite in their replies, and in 4 the symptoms were essentially different from those experienced in their illness These observations show only that some of the phenomena produced by fear are the same as some of the phenomena of effort syndrome in a given man , and that if subjective sensations are the criterion of an emotional state, then the emotional state of effort syndrome is partly that of fear

Hypochondriacal phenomena were not uncommon 53% of all cases were preoccupied with their symptoms unduly , they exaggerated their sensations and studied themselves with zealous care The majority (64%) believed that they had some affection of the heart The tenacity with which the men held this belief on arrival in the hospital was far from uniform, some offering it indifferently for lack of any better explanation, others maintaining it with the certainty that attaches to an idée fixe or a delusion The number of these varied from time to time, and was dwindling as prompt and confident diagnosis in these cases before referring them to hospital became the rule rather than the exception The same cannot be said of the patients' attitude towards the cause of this supposed affection of the heart , most of them still attribute it in the main to the effort or exertion they have had to make in their military work, and the diagnostic term " effort syndrome " has seemed to lend colour to this notion

MECHANISM

The mechanisms can be seen physiologically as those of the autonomic system, psychologically as those of emotional expression , this familiar dualist attitude is pragmatically justifiable, though the two types of mechanisms can more properly be regarded as two aspects of the same complex happening, each capable of more or less separate and independent activation Thus fear, as a subjective experience, will as a rule be accompanied by somatic (autonomic) manifestations—sweating, goose-flesh and dry mouth—but fear may be experienced without these physical signs, and some at any rate of these physical signs may be exhibited (for instance, under the influence of drugs) without the subject feeling the same quality of emotion As to their prevailing mood, 50% of the men were depressed and over 70% showed evidence of anxiety

Physiological observations made by one of us (M J) in conjunction with Guttmann (1940) have been reported elsewhere The psychological mechanisms are more complicated than would be supposed merely from studying those men in whom direct threats or warnings of danger have sufficed to bring on acute symptoms of effort syndrome—e g , sweating, palpitation, trembling and breathlessness Thus in some men the response to bombing is far less severe than the symptoms that develop when they are exercising peacefully in the gymnasium, or lying on their beds at night at times when there is little or no enemy activity over London The most striking observation is that almost all the men can exert themselves in the carpenter's shop or elsewhere without developing symptoms of effort, to a degree exceeding that which would bring on symptoms if they were at physical training or other obvious form of exercise The more interest and pleasure the man has in his exercise, the less is it likely to produce undue symptoms of effort In short, it is not effort but the situation in which effort may be required, and the emotional attitude of the man towards this situation, that are often the significant factors This observation is in keeping with many that have been made in industrial psychology (Mace 1936 and Wyatt 1934 on incentives, and Wyatt and Fraser 1929 on the effects of monotony in work) Cathcart's (1935) comment is relevant

> " It cannot be too strongly emphasised that the human being is no mere machine and that the mechanical efficiency of performance is not of primary importance The performance of work by the human being is not a mere function of the combustion of so much fuel in the muscles involved in carrying out the particular movements Indeed the application of the word efficiency with its definitely limited mechanical meaning to the results of human activity is almost certainly not valid "

It is difficult to describe the psychological mechanisms (as apart from the causes) whereby symptoms are produced A mechanism implies a fixity of performance, no matter how it is set going or where it is occurring, which is difficult to distinguish in the details of individual psychological behaviour, the nearest approach to it being evident in the development of habits, or so called complex conditioning There are at present several psychological theories—for example, the Pavlov theory of conditioned reflexes and the various hormic and libidinal theories of dynamic psychology—in terms of which the mechanism of symptom formation in these patients can be described, but such alternative explanations, equally plausible and equally disputable, are rightly suspect

There is, moreover, no such regularity in the psychological as in the physical phenomena, since by definition certain physiological phenomena, such as breathlessness, must be present, and the physical apparatus subserving these phenomena must therefore be in action, whereas there is no word of explicit psychological phenomena in the definition Consequently the term includes patients with anxiety and depression of which they are aware, as well as those who are not conscious of any such feeling , patients who are hysterically keeping up and fostering their symptoms, along with others who hypochondriacally fear theirs , some whose symptoms are mainly physiogenic, as after severe influenza , and some who have no symptoms that cannot be interpreted as plain fright There is a constant temptation to single out one of these groups and call it true effort syndrome Actually the problem is not that of effort syndrome but of anxiety neurosis, hysteria, hypochondriasis, post influenzal fatigue and other states which are all lumped together under this umbrella , and the mechanism is as little or as much known as the pathology of these familiar conditions We have not found anything peculiar to effort syndrome in the psychopathology of the cases seen here Studies of the inter-relation of the psychological and physiological phenomena are more to the point, as are studies of the psychological aspect of causation, next to be discussed

EXTERNAL CAUSES

First among external causes to be examined must be effort—or at any rate, as indicated above, the situation in which effort has been required A considerable number of men reported that their first twinge of pain or other symptom came on while they were attempting to make an unusual or exhausting effort But it turned out that this was less significant than had been one's impression, based on isolated cases Only 47% of men in the whole series reported that the work they were doing when their symptoms began was heavier than they were accustomed to do without discomfort before the war, from which it must be inferred that there were other important factors besides effort bringing on their symptoms in the first place Only 16% had had a sedentary pre-war occupation (clerks or shop assistants), 48% had done heavy work as labourers, miners or draymen These proportions differ from those found during the last war Moreover, 47% of the men had not had any familiar symptoms of effort syndrome at the beginning of their illness , in nearly half of these cases (20% of the whole) the first symptoms had been those of a respiratory infection, passing by degrees into an effort syndrome, irrespective of whether they undertook effort or not Clearly effort was not the precipitating factor, though, of course, many of the men had come to regard some effort as one of the original causes of their illness and as the chief cause now of the occurrence of symptoms at any time this is linked up with their belief that the heart was affected and that effort is bad for the heart But they seldom incriminated effort alone Those who had been in camp during the winter, especially in France, blamed the weather and living conditions as much, or more, than the actual hard work In those who had not been overseas it was work that they disliked that brought on acute symptoms, and a high proportion (72%) of all the patients reported that their symptoms would come on also while they were at rest

Some of the men had been given work for which their previous training and experience had not fitted them , they were obvious misfits Many of those with effort syndrome had not found Army life to their liking, though there were exceptions (8% were in the Regular Army at the outbreak of the war, and many others had formerly been in the Army), but of the volunteers (who accounted for 25% of all cases in a series analysed in June, 1940) and the conscripts, a majority had not taken to their new life, though in many cases willing or anxious to "stick it" This is relevant to their production of symptoms under Army conditions, especially while doing drill, physical training, digging or other essential Army work, though they may be free from symptoms in the occupational shops in hospital (while sawing at carpentry, for example) This is not a question of deliberate pretence (skrimshanking), for the patient is actuated by motives of which he is unaware or only dimly aware hence his tendency to give a pseudo-rational explanation of the symptoms—according to his prejudices and half-knowledge—as being due to heart strain, exposure, unusual diet, nerves or poor constitution Sometimes such explanations hit the nail on the head, but more often they are a rationalisation—a vague search for external causes when the man cannot admit to himself what it is that chiefly actuates him in developing his symptoms He may say frankly that he would like to be out of the Army, and even proclaim it resentfully or provocatively, but he does not connect these feelings and wishes with his symptoms, though to the physician the connexion may seem warranted or obvious Clearly there is in such men a mixture of external causes (Army life) and what may be called internal causes, predisposing them to exhibit such responses to threatening, depressing or otherwise disturbing circumstances Contributory factors were exhaustion, infection (30%) and insufficient sleep, though after these have ceased to operate (as after a stay in hospital) the man's symptoms may still persist, and the causes for their persistence therefore have to be sought elsewhere

The external causes just discussed are recent ones, closely connected with the war, along with them must be included such stresses as separation from wife and family, worry about financial and domestic troubles (such as a wife's fidelity), uncongenial company, unsuitable work, painful experiences (encountered by the patients who were evacuated through Boulogne and Dunkirk after active fighting) and added responsibility through promotion and the like There were also the effects, after the onset of the illness, of repeated examination, especially directed to the heart, and perhaps of an incorrect diagnosis of cardiac disorder

More than one cause was the rule in these cases Multiple causation is familiar in psychiatric illnesses and it would require detailed tables or case-histories to demonstrate how interwoven were such cases in these patients Besides the recent external causes there were more remote ones, almost equally important They were varied, no common causes (such as rheumatism or psychological traumata in childhood) could be demonstrated in most cases Nevertheless the patient's earlier history often helped to explain why he had been brought to his present pass Thus a considerable number of men (60% in one series of a 100) had had one or other parent with symptoms similar to those of the patient, sometimes arising from heart disease, sometimes from pulmonary disease, often from a neurosis The illness of their parents had made a considerable impression on these men, often leading them to view with alarm the least sign of heart trouble, so that any suggestion of heart disease could be a significant factor in the development of their disorder Others had been suspected of having heart disease in childhood because of a murmur or some trivial symptom, and had had care and avoidance of effort enjoined upon them by an over-prudent doctor A few others had a horror of military service inculcated by a parent, sometimes a widowed mother whose husband had been killed in the last war There was the weakling who had been frightened in childhood and remained timid and averse from rough and tumble, the rebel whose upbringing and relationship with his parents and brothers conduced to his resentment of authority, the spoilt only child, the temperamentally unstable son of quarrelling or over-solicitous parents, who shows hypochondriacal or other manifestations of emotional conflict and frustration—there are many examples among our patients of life histories in which such familiar details figure It need scarcely be said that facile explanations in terms of psychic traumata in childhood (such as were once current in the psychopathology of neurosis) do not suffice, though experiences in childhood may figure prominently in the chain of causation for these cases

So far as physical disease is concerned, 14% of the men had some organic disease (of the circulatory system in 4% and in 10% mainly pulmonary conditions) It was never sufficient to account for their present symptoms, but it had sometimes been responsible, as in those who had had pleurisy or pneumonia, for the onset of their syndrome, which had subsequently been kept going by other causes The effort-syndrome cases had been well sorted from those with physical disease still causing their symptoms before they were referred to us

INTERNAL CAUSES

Constitution may be described in its physical aspects (physique, habitus, diathesis, idiosyncrasy) or its psychological (personality, character, instinctual trends) Though a certain degree of constancy or permanence is implicit in the usual notion of constitution, it does in fact appear to change in certain respects, so that one should properly speak of a man's constitution at a particular time of his life, rather than assume he has the same constitution from childhood to old age A person originally of spare, asthenic habit may become plethoric and somewhat pyknic in type, or an idiosyncrasy may die away in middle life A man's constitution is, in effect, his inherited tendencies, as inferred from the way they have hitherto manifested themselves under the conditions (nutritional, psychological and so on) of his life In practice the manifestations themselves are largely taken as the measure of his constitution It is therefore customary to take bony, muscular, and fatty structures as an index of physique

There are many indices which have been proposed and used for this purpose One of us, with E Guttmann and W L Rees, investigated the most recent, and apparently the most satisfactory of these (the Stromgren index) in cases of effort syndrome Inspection had suggested that a large number of the men were of asthenic build and that their posture was bad As regards posture, the lack of any reliable measure obliged us to leave the matter uninvestigated, though we would be disinclined to put any weight on the observation, since it is probable (as appeared in Brown's (1921) study of 740 young male adults) that three-quarters of the male population adopts a bad posture judged by orthopædic standards The build of the patients, however, could be measured and judged by well-tried methods The Stromgren index (ϕ_3) has many advantages, and, when applied to Danish, Swiss and American populations, has served to distinguish those of asthenic habitus very well (Stromgren 1937) It is a function of the stature, the width and depth of the thorax, according to the equation

$$\phi_3 = -0\,040a + 0\,127b + 0\,156c$$

where a = stature, b = breadth of chest, c = depth of chest at the level of the 4th costal cartilage

We found in 85 patients that the Stromgren index gave an average reading of $-1\,059 \pm 0\,412$ (coefficient of variation 38 9) This would correspond, on the Stromgren observations, to a pronouncedly asthenic habitus To check this we made similar measurements in a group of 48 manic-depressive patients kindly put at our disposal by Dr J S Harris of Claybury Hospital The average reading for the Stromgren index in them was $-0\,7938 \pm 0\,289$ (coefficient of variation 36 4), this was rather surprising, since though significantly different from the average in our patients it did not indicate the pronounced pyknic habitus that is to be expected in such patients, according to previous work We next measured a group of 79 healthy soldiers, a random sample of the men stationed at a near-by barracks The average index we found to be $-0\,969 \pm 0\,38$ (coefficient of variation 39 34) This figure is not significantly different from that obtained in our group of patients with effort syndrome (standard error of difference of means 0 062), it must therefore be concluded, if the two groups of effort-syndrome cases and healthy soldiers be accepted as random samples, that soldiers with effort syndrome are not, as a group, more asthenic in build than healthy soldiers

Skeletal measurements such as these have been thought (*a*) to exhibit relationships (expressed in indices) which are statistically demonstrable and definite enough to justify setting up types, and (*b*) to correlate with other characteristics, especially personality and proneness to a particular type of mental disorder. But such criteria are not obviously relevant to the composite clinical problem presented by effort syndrome, nor are skeletal measurements necessarily the best, even if among the most unvarying manifestations from which to infer constitutional tendencies and types. The same may be said of some other characteristics which are entirely, or almost entirely, determined by heredity (for example, blood group and response to phenylthiocarbamide); *there is no reason to suppose that they would yield useful* information here. Intelligence tests also normally measure a constitutional character, but we found a normal distribution of intelligence among our patients.

It seemed probable that a study of function would be more enlightening. What indications could be found of predisposition to the disorder, apart from those suggested by the illness itself? In other words, had these men been ready to respond with the normal form of response to what would ordinarily be inadequate stimuli, or ready to respond with excessive or quantitatively different responses to what are normally threshold stimuli? The response might be somatic in form (particularly along special lines; for example, cardio-respiratory or metabolic); the stimuli arousing it might be an emotional situation causing, say, fear and depression, or, of course, some physical disturbance, such as an infection or effort.

To determine such predisposition one is largely dependent on the patient's history—an unsatisfactory state of affairs. We found that 50% of our patients had had, often for the greater part of their lives, symptoms of vegetative disorder (such as breathlessness, palpitation, excessive sweating or diarrhœa) on slight provocation of an emotional sort, in the same way as they found their effort syndrome coming on whenever they got excited or perturbed, for instance, by having to interview a senior officer (cf. "anticipation neurosis" often diagnosed during the last war). Moreover, 38% had from the beginning, *before the onset of their present illness, found it* difficult or impossible to wear a gas mask, as it made them feel that they were breathless and choking. Other signs of predisposition in the sense described were that 40% of them had not played any games, in many instances because it upset them, and only 25% had fairly good athletic records. Half the men had shown neurotic traits severe enough to be called symptoms (stammering, bed-wetting, walking in their sleep). Nearly two-thirds had shown a more or less pronounced anomaly of personality; they had been, for example, shy, tense, hypochondriacal, sensitive or delinquent. The type of premorbid personality corresponded to the type of illness, psychiatrically diagnosed, and showed no special relationship to effort syndrome, considered as one illness. The most satisfactory evidence of predisposition to any illness is an attribute which remains constant whether the patient has recovered, has never been ill in this way, or is still ill, and which is related to his illness—in this instance to his emotional, respiratory and cardiovascular behaviour. No such attribute, however, has been recognisable. It might be thought that the response to the exercise-tolerance test was such an attribute; our observations do not bear this out, for 56% of our patients had a good response to the test (well within normal range) while their symptoms were still severe. The higher the initial pulse-rate the worse the response as a rule, but only 30% had an initial (i.e., resting) pulse-rate of over 90. In some, but not all, the rate of the pulse and the exercise response were dependent on their emotional state when being tested. Where the pulse-rate and exercise-tolerance test were unsatisfactory the man was sure to have fairly troublesome symptoms, but the converse did not hold. The test was not a criterion of improvement. All this is in conformity with the observations of McFarland and Huddleson (1936) on neurocirculatory reactions in the psychoneuroses.

An important finding was that 67% of the patients had had symptoms of effort syndrome before the war. In many the symptoms dated from their early schooldays, and the average duration of symptoms over all cases was 12 years. To say that they had had symptoms is perhaps misleading; symptoms that are ignored are scarcely symptoms. Many of them had never thought of going to a doctor for the dyspnœa or palpitation which they occasionally had on exertion or emotion, but had disregarded these sensations. Others, however, including some older men who had been invalided out of the Army with "D.A.H." in the last war, had regarded the condition as an incapacitating illness. This long history of symptoms, whether disregarded or not, indicates predisposition which is difficult to distinguish from pronounced "functional" illness, since the extent to which he is incapacitated will often turn on the man's attitude to his feelings, or on other people's attitude to them. This compares with the epileptic who may continue working or stop, according to whether anybody will risk employing him, and the hypochondriac who may be able or unable to work according to his view of the matter. It is not always the symptoms themselves so much as the attitude that the man and other people adopt towards them which may be the decisive factor.

NATURE OF THE DISORDER

The syndrome, being without any demonstrable somatic pathology, must be classified according to the functional changes manifested—that is, descriptively—or else according to its ætiology; a third possibility is to see whether all its characteristics appear in any other well-recognised syndrome or disease, in which it then might be included. This last has been the course adopted here. As the causes of effort syndrome are numerous and no single cause is preponderant in most cases, a classification according to ætiology can scarcely be made. It is not even possible to say that all the cases are mainly psychogenic, mainly physiogenic or mainly of hereditary origin. There are similar difficulties in the way of classification according to the functional changes; they may be roughly subsumed under such headings as autonomic disturbance, neuro-circulatory disturbance or metabolic disturbance, but this is too vague to be of use and any attempt to narrow down the category brings in other conditions not belonging to effort syndrome. The third possibility has led many writers to include the *disorder under the category anxiety state or anxiety* neurosis. This is somewhat unsatisfactory because there are some patients who exhibit depressive, hypochondriacal or hysterical features which may outweigh the anxiety features. It is not denied that many of the patients fit into the anxiety-state category without difficulty, but there are enough who have to be diagnosed otherwise to invalidate it as a general category.

The evidence is that effort syndrome is not a homogeneous group from any clinical standpoint, though administratively and practically there are excellent reasons for delimiting it. The syndrome is, however, in its setting, causes and form, a neurotic one. This is not to say that it is mainly a psychogenic disorder. Neurosis, like all mental disorders, can be in considerable measure physiogenic (as postencephalitic obsessional neurosis, postinfective neurasthenia and post-concussional personality disorder illustrate), but it does have to exhibit disturbances of function at a high level of integration—i.e., psychological disturbances—and its symptoms must not be such as can be properly attributed to definite and recognisable organic disease. In this sense effort syndrome is a neurosis. Such a classification does not prejudge the issue of what physiological mechanisms are at work nor indicate that psychological treatment is necessarily called for in all cases. A neurosis is a disorder of the patient, not of his disembodied mind only, or of his mindless body only, if such things can be conceived of. In a neurosis, physiological phenomena, either constitutional or temporary and reversible, will occur along with more conspicuous psychological ones. This is true of all illnesses that can be classified as mental disorders, of whatever degree or type—*neuroses and psychoses*, physiogenic and psychogenic. The distinction is only one of convenience at bottom.

We have therefore not been satisfied with effort syndrome as a diagnosis, but have classified the cases (100 successive admissions) as follows: anxiety state, acute 17%, chronic 14%; depression 12%; psychopathic personality 18%; hysteria 11%; postinfective 11%; hyperventilation tetany 1%; organic disease 11%; high-grade mental defect 4%; schizophrenia 1%.

The postinfective group represents an attempt at ætiological classification in an instance where one cause appears predominant; many of these patients showed a mild depressive state—neurasthenia They included men who had had paratyphoid, cerebrospinal meningitis, influenza and rheumatic fever. The patients with psychopathic personality were for the most part lifelong hypochondriacs, preoccupied with their health, self-centred, unenterprising and timid Among those with organic disease, asthma, chronic bronchitis, old empyema and pulmonary tuberculosis occurred They were mostly older men There were also some among them with cardiac disease, which, in the opinion of our colleague Dr Paul Wood, could not be held responsible for their symptoms, so that it would not be improper to classify them under the other categories, though we have left them among the 11% with organic disease The mentally defective were men whose intelligence quotient lay between 70 and 80 Fuller consideration is necessary for the cases classified as anxiety states, depression and hysteria

The differences of opinion between those who would call most of these cases anxiety state and those who would prefer the diagnosis of hysteria are to a large extent terminological For the psycho-analyst, “ psychoneurotic anxiety state ” is a subdivision of hysteria (except in the case of a small group, “ actual anxiety neurosis,” which he seldom if ever sees and only retains out of respect for Freud’s earlier formulation) For the non-sectarian psychiatrist an anxiety state is characterised by physical and psychological phenomena of fear experienced when there is no external danger sufficient to account for them It is the fixity of pattern in the physiological phenomena, and still more their relative independence of voluntary control, as well as the quality of the subjective emotion experienced (which may be called fear, anxiety or apprehension, according to one’s definition of these terms) that distinguishes the disorder from hysteria A mixture of anxiety features with hysterical ones is, however, common, the hysterical features being evident not in conversion symptoms which simulate neurological disorder, nor in dissociative-dysmnesic anomalies, such as fugues, but in motives that determine the form, time and place of manifestation of symptoms These motives are not fully conscious and are directed at some psychological and perhaps material gain to be derived from the illness Besides the mixture of anxiety and hysteria, it is common to find a mixture of anxiety and depression Most of the cases diagnosed as acute or chronic anxiety state had also much depression, and those who are here diagnosed as predominantly depressive (12%) had nearly all some anxiety symptoms too Half the depressive patients had had previous similar phases, some had had suicidal tendencies It will be observed that 43% of all cases could be properly classified as “ affective state ”

TREATMENT

After an initial exploratory period, during which graduated exercises held the chief place in treatment, a regime was instituted which took into account the main symptoms so far as they limited the exertion the man would undertake, but sought to avoid stressing this aspect Thus systematic occupation played as large a rôle as physical exercise, and exercise was not insisted on for men who seemed unlikely on psychological grounds to benefit by it Sir Adolphe Abrahams, who observed and graded the men while they were doing physical training, confirmed or corrected this conclusion in many cases Psychological treatment in the form of persuasion and suggestion was given, much or little according to the usual psychiatric principles, and when external stresses, such as domestic worries, had been responsible for provoking the illness, an attempt was made to remedy them if possible There was nothing in all this different from the treatment given to neurotic patients in the other division of the hospital Among the postinfective cases there was no call for specialised psychotherapy but plenty of need for measures, based on psychiatric and general medical experience, to prevent the convalescent patient from slipping into hypochondriacal invalidism Such rehabilitation was in all cases far more a matter of treating the man than of treating his symptoms—hence the avoidance of too much stress on physical exercise alone

The initial steps in psychological treatment have to take account of the belief or fear which most patients have that their hearts are damaged and that their life is therefore in danger—they may drop dead, they think This belief is incompatible with improvement, and it is not to be shaken by dogmatic reassurance It may rest partly on incorrect diagnosis by previous doctors, but this is less important than the simple reasoning whereby the patient attributes to his heart any pain over the left side of his chest, any shortness of breath or palpitation on exertion He arrives at an irrational dread or pessimistic conviction about damage to this vital organ, which is always a ready focus for anxiety, however generated To combat this, rational proof and firm contradiction alone will be found insufficient The patient must either be given strong suggestion (effective only in a minority of cases) or he must be given a positive explanation which he can accept and understand Just as it is not enough to let his statement “ I think it is my heart ” pass without getting him to say what he really feels and means, allowing for his crude notions of physiology and disease, so it is useless to tell him, when physiogenic factors have been excluded, that his nerves are at fault or that psychological trouble is to blame He will perhaps repeat such phrases parrot-fashion, but is either at heart resentful because he suspects he is being accused of swinging the lead or not wanting to do his bit, or he feels that he is being cajoled and persuaded into denying the obvious Negative or vague reassurance cannot supplant an emotionally based habitual belief We have given the patient an explanation which is suited to his intelligence and general knowledge, and which he can accept without feeling resentful or ashamed of himself It is midway between a meaningless phrase like “ nerves ” and a long account of psychological and physiological mechanisms which would be for him an obscure rigmarole or a quarry for catch-phrases Occasionally, in some stupid and grossly hypochondriacal or hysterical patients, a simple somatic explanation or analogy which stressed the real harmlessness of the symptoms was given with suggestion to back it up, in others a more candid explanation with elucidation of emotional factors was found profitable The treatment was on the lines of persuasion and re-education Hypnosis has not been used When difficulty has arisen in respect of pain on exertion analogy was used to illustrate that that too could be psychogenic Here a frontal attack on the symptom seemed as inappropriate as in hysterical hyperalgesia or headache Various suggestive measures were also used for dealing with this and other local symptoms

The place of treatment may not be without importance in the results obtained, thus it might be held, on a priori grounds, that to treat men whose symptoms are largely those of fear in a place where sirens, anti-aircraft guns and enemy bombers are frequently heard is irrational To ascertain data on this point 50 of the patients were questioned two weeks after the onset of daily raids last autumn, 28 of them said their state of health had not altered at all since the daily raids began, 18 said they felt better and 4 said they were worse Some felt more “ nervous ” though their symptoms of effort syndrome had improved, altogether there were 16 who said they were more nervous as a result of the raids, 20 patients maintained that they had developed new symptoms since the raids started—frequency of micturition 10, dry mouth 3, flatulence 3, insomnia 3, headaches 2, diarrhœa 2, loss of appetite 2, stammer 1, hot flushes 1 and trembling 1

At one stage of the blitz, cases of effort syndrome had to be evacuated from here to a hospital in the country, where they remained for three weeks This afforded an opportunity for studying the effect of environment and relative freedom from danger, or the reminders of danger, on these men After two weeks in the country, and before the men realised that the evacuation was only temporary, a survey was made of 48 cases Of these, 18 had shown definite improvement since being evacuated, most of them expressing a desire to return to duty, 27 showed no apparent change in their condition, 3 were distinctly worse These figures are inconclusive, and even if most of the men had improved strikingly it would not have indicated that the improvement was established and would persist when they were again exposed to danger, 28 of them said that they did not think coming back to the danger area would make their symptoms worse Without discussing further a question which is of general importance in the treatment of neuroses—the removal of removable stresses during the period of treatment—we would record our opinion that for those cases of effort syndrome in which the psychiatric diagnosis is acute anxiety or acute depression treatment in a relatively safe and quiet spot is preferable during the early stage of the illness, but that where hysteria, psychopathic personality, hypochondriasis or a chronic disorder is evident, somewhat different conditions, approximating to ordinary risks and discomfort, are not without therapeutic advantage in the long run But this is only the framework within which treatment is carried out

PROGNOSIS AND OUTCOME

Prognosis has not been easy to evaluate By the time of their discharge from hospital few patients are quite free of symptoms, but many are as well as before they joined the Army—that is, they have improved greatly under treatment The mode of disposal has been as follows in 200 cases 39 (19 5%) were sent back to their units for full duty (sometimes with a recommendation for transfer) in category A, 9 intermediate cases returned graded as category B, 111 (55 5%) returned to their units for light duty at home in category C, and the remaining 41 (20 5%) were discharged from the Army (category E) Thus approximately equal numbers made an apparent recovery or were discharged, and the remaining 60% were returned to the Army for light duty A systematic inquiry into the subsequent military history of 135 men who were returned to duty in one or other category was made six months or more after discharge from hospital Replies about 62 of these men have so far been received from their commanding officers 20 of them are now doing full duty, 15 are on light duty and 27 have been discharged from the Army as unfit It is therefore the case (there being no reason to suspect that these 62 men are not a fair sample of the whole 135) that about a third of those treated and sent back to duty do well in the Army, a quarter of them moderately well and three-sevenths have to be invalided out Similar results have been obtained by Dr Paul Wood This would indicate that of all the men admitted here with effort syndrome a quarter are back on full duty when an inquiry is made six months later, this is much the same as the 24% in our series sent out of hospital as category A or category B The 43% of men returned to duty who have been subsequently discharged as unfit are drawn in the main from the ranks of those classified here as category C It is scarcely proper to compare these findings with those in the supplementary memoranda of the Medical Research Committee Report of 1918, since so many of our patients had not seen active service before coming here, and few of those followed-up have as yet been subjected to the stress of active warfare

In order to determine what are favourable prognostic features, the records of 35 patients now returned to the Army for full duty in category A were compared with those of 35 patients who were discharged from the Army in category E Significant differences were found in respect of the following characteristics willingness or eagerness to return to the Army for duty, incapacity to wear a gas mask without great discomfort, having had a parent with supposed or actual heart-disease, bad response on exercise-tolerance test, suspicion of ill health and avoidance of exertion during childhood, neurotic traits, bad work record, belief that the heart is damaged, acute onset of the condition The findings were as follows

	Category A	 E
Wish to return to Army duty	31	14
Gas mask very uncomfortable	6	33
Parent with heart symptoms	11	25
Bad exercise tolerance test	9	19
Ailing as a child avoided exertion	4	15
Neurotic traits	7	17
Bad work record	2	12
Convinced heart affected	8	25
Acute onset	17	8

Other factors which did not occur with significantly different frequency in the two groups were the nature of civilian occupation, average length of Army service, average length of stay in hospital, active service in France, relative numbers of volunteers, conscripts and
reservists Another difference not found to be signifi
was in the number who had had rheumatic fever at s
time in their lives, 4 of those discharged categor
and 9 of those discharged category E reported
($\chi^2 = 1\ 5$, $P = 0\ 2$) The duration of illness in the
groups was very different, in those discharged catego
(excluding 2 who had had symptoms all their lives)
average duration was 2½ years, whereas in those
charged category E (excluding 6 whose symptoms v
lifelong) the average was 8 years

Comparison of small groups in respect of individ
symptoms and features is not the most satisfactory
of discovering what chiefly decides the outcome of
illness such as this Whether the man succeeds
getting rid of his incapacity depends on so many inte
as well as external factors that an appraisal of
aptitudes and attitudes must be balanced against the
he will be called on to lead If he is honestly determi
or even willing, to try to do his military duty well,
symptoms will in many cases be of small conseque
just as they were of small consequence when he had t
in civil life, in another man a reluctance, of which
may be partly unaware, to live the life of a soldier is
of the chief causes for the persistence of his sympt
and, more important, of his neurotic incapacity It
be said with a little exaggeration that the symptom
themselves are neither here nor there, two pati
may have just the same symptoms, just the same exer
tolerance, just the same physical phenomena, yet one
carry on quite well while the other cannot be got to un
take exertion The physician has therefore to take
account not merely the patient's symptoms, response
effort and so on, but his whole equipment, physical
psychological, for meeting the requirements of his d
life as it now is during this war The factors which in
patient or one group of patients are all-important app
insignificant in another group where some other tr
some constitutional twist, some hardship of military
or accident of circumstance, can be seen to determine
outcome

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INTRAVENOUS ASCORBIC ACID IN EXPERIMENTAL ACUTE HÆMORRHAG

BY

C P STEWART, J R LEARMONTH,
M SC DURH, PH D EDIN CH M GLASG, F R C S E

G A POLLOCK,
M B GLASG, M S MINNESOTA, F R C S E, F A C S

*(From the Wilkie Surgical Research Laboratory, Univers
of Edinburgh)*

Loss of hæmoglobin in acute hæmorrhage and cir
latory failure in shock both lead to a considera
diminution in the supply of oxygen to the tissues, wh
is usefully treated by transfusion of either blood
plasma The same improvement might be achieved
certain cases if the patient were enabled to use m
efficiently the oxygen-carrying power he still possesse
in shock this might well lead to the return of immobilis
blood to active circulation, and in acute hæmorrhage
the survival of the patient of an adequate metabo
level until the lost hæmoglobin was replaced by natu
mechanisms or by transfusion In any case, an ea
means of increasing the tissue oxygen supply mig
prove of value until transfusion was convenient
possible It seemed to one of us (C P S) that since t
problem resolved itself into assisting the transfer
oxygen from a diminished reservoir in the blood to t
tissues, it might be useful to inject intravenously so
substance which was readily and reversibly oxidisab
in the animal body Methylene-blue suggested itself

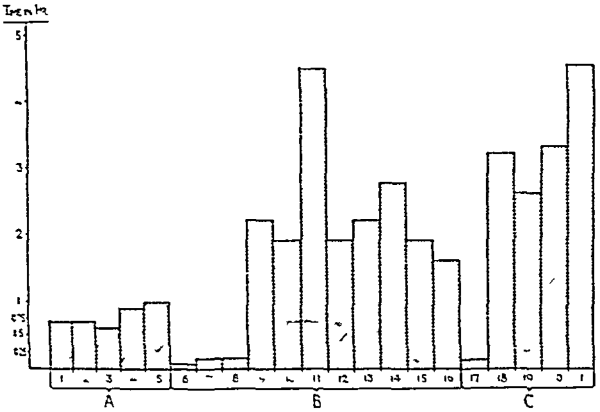

FIG 1—Survival periods in 21 experiments A controls, B 1 g sodium ascorbate in 6 c.cm saline C, 200 mg sodium ascorbate per kg body weight in saline equal to half the blood loss

a possibility, but in other conditions experience with this dye had been disappointing It seemed more hopeful to try one of those substances which either directly or after conjugation are believed to act as intermediate hydrogen carriers—for example, lactoflavin phosphate, nicotinamide, glutathione and ascorbic acid The results of the intravenous injection of ascorbic acid seem sufficiently encouraging to justify this preliminary communication

To relate this to previous work, we used many of the standard conditions adopted by Buttle, Kekwick and Schweitzer [1] in their experimental evaluation of blood substitutes in the treatment of acute hæmorrhage Cats were used on a warmed operating table, under full ether anæsthesia maintained by an intratracheal tube The blood pressure was recorded from the right carotid artery, respiration by a tambour Blood was removed through a cannula in the right femoral artery, and injections were made through a cannula in the left femoral vein After blood-pressure and respiration had become stable, blood was allowed to escape through the former cannula to about half of the blood-volume, calculated as 6% of the body-weight This produced a considerable fall of blood-pressure and often respiration of a spasmodic type

RESULTS

Controls—In a series of 5 control experiments, our findings (fig 1) agree with those of Buttle, Kekwick and Schweitzer, all the animals dying within an hour In these circumstances we felt that more controls were not necessary

Ascorbic acid—When the effect of intravenous injection of ascorbic acid was tested, it was clear that by this means the life of an animal bled under standard conditions could be prolonged To test the effect of varying doses, 16 experiments were performed In all cases the acid was dissolved in warm normal saline solution, and neutralised immediately before injection with the appropriate weight of sodium bicarbonate In 11 cases the amount of fluid injected was 6 c cm, and in 5 cases the amount of saline used was half that of the actual blood lost The dose varied from 200 mg per kg of body-weight to a dose of 2 g The effect of spaced dosage was also investigated, the first dose being given when the animal seemed at the point of death, the second after improvement had ceased and the blood-pressure had begun to fall again The best results were obtained when a dose of 200 mg per kg of body-weight was given in an amount of normal saline equal to half of the blood loss (fig 1) We were anxious for practical purposes to reduce the volume of fluid to be injected, and decided to give a single dose of 1 g in 6 c cm normal saline The periods of survival are shown graphically in fig 1

The effect on the exsanguinated animals of the intravenous injection of 1 g sodium ascorbate in 6 c cm saline may now be considered in detail (*a*) There was usually an immediate rise of blood-pressure, which began 10–15 sec after injection and reached a maximum value of from 5 mm to 64 mm Hg (*b*) The largest rise in blood-pressure corresponded to the longest period of survival but period of survival cannot be correlated with rise in blood-pressure, for cat 16 lived for 1 hr 40 min, during which the blood-pressure rose only 5 mm Hg, while cat 10, which lived approximately the same time, had a rise in blood-pressure of 42 mm Hg (fig 2) (*c*) Three of the animals (nos 6, 7 and 8) died soon after the experiment was started Cat 6 showed a rise of 14 mm Hg, it was pregnant Cat 7 showed a rise of 28 mm Hg, it collapsed twice under the anæsthetic Cat 8 showed a rise of 15 mm Hg, it was an old cat in poor condition (*d*) In the animals which survived a striking feature of the record after the injection was the rapid reappearance of a good pulse-pressure, and the maintenance of this even when the systolic pressure remained low (fig 3) (*e*) There was a rapid improvement in respiration (fig 3)

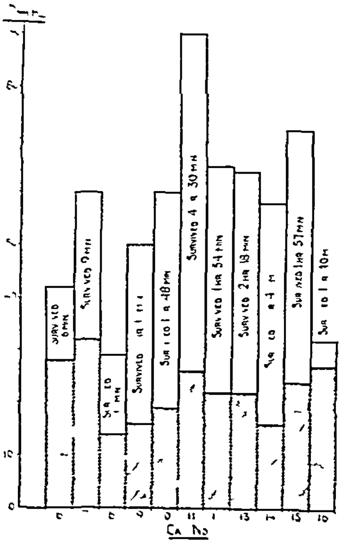

FIG 2—1 g sodium ascorbate in 6 c cm saline The shaded part of each column shows the lowest blood-pressure after bleeding, and the unshaded part the highest blood-pressure after injection of sodium ascorbate The time of survival is indicated in each case

The administration of sodium ascorbate does not interfere with the beneficial effect of transfusion of plasma, we found it possible to prolong life for at least 6 hours by returning the animal's plasma to it at intervals after the administration of the sodium ascorbate up to 4 hours In the circumstances in which we were working the experiments had to be terminated although the animals were still in good condition

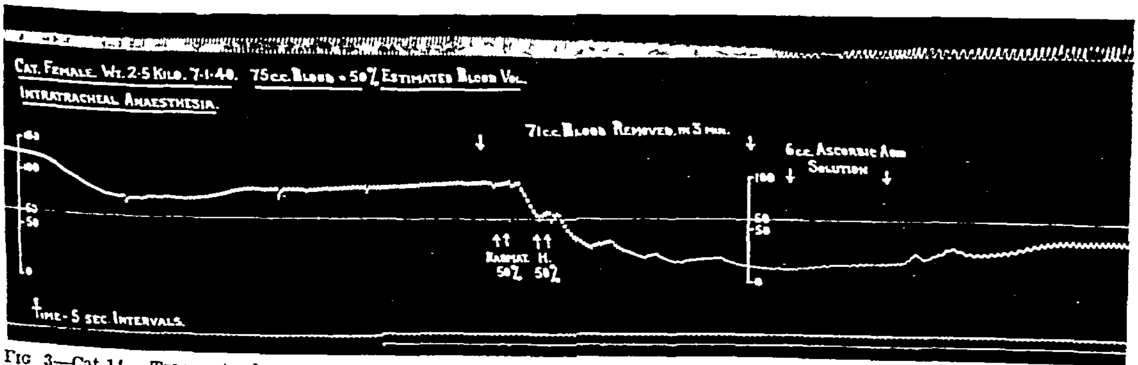

FIG 3—Cat 14 Tracing to show (1) the effect of bleeding, and (2) recovery of blood pressure and pulse pressure after injection of 1 g sodium ascorbate in 6 c cm normal saline solution

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[1] Buttle G A H Kekwick A and Schweitzer, A *Lancet* 1940, 2 507

DISCUSSION

Our results show that in acute hæmorrhage in cats the benefit to be expected from the intravenous injection of 6 c cm sodium-ascorbate solution is at least as great as that from a much larger volume of normal saline or isotonic glucose Buttle, Kekwick and Schweitzer found that when these crystalloid solutions were used to replace lost blood there were no survivors after 1 hr 40 min in our series of experiments with sodium ascorbate, 8 out of 11 animals survived the strain of rapid bleeding to half the blood-volume, and each of these 8 cats survived longer than 1 hr 40 min The volume of fluid replaced (6 c cm) cannot play a part in promoting this temporary recovery , the possibility that its hypertonic nature contributed we excluded by giving 6 c cm of 15% saline solution without benefit in 3 controls It seems that there are grounds for attributing the temporary improvement to increased availability of oxygen for the tissues, and the problem will be investigated more fully It is possible that certain combinations of substances—for example, ascorbic acid-glutathione—would be even more effective , and Prof I de B Daly has suggested that the addition of a respiratory stimulant such as lobeline would increase the usefulness of such intermediate hydrogen carriers If there is an opportunity, we intend to test the efficacy of intravenous ascorbic acid in accidents and in injuries during air-raids We propose a dose of 3 g in not more than 10 c cm of solvent [2] , and the type of case we seek to benefit is the casualty pinned under wreckage who can be reached and cleared sufficiently to identify a vein, or the casualty to whom it is impossible for one reason or another to give an immediate transfusion of blood or plasma We wish to emphasise that we do not hope to find the injection of ascorbic acid a remedy for hæmorrhage or shock, but at best a possible means by which certain patients who are alive and not past recovery may be brought to blood or to plasma

SUMMARY

Intravenous injection of ascorbic acid prolongs the life of cats bled to 50% of their original blood-volume

It is possible that the action of the ascorbic acid is to secure a more adequate supply of oxygen to the tissues

A CASE OF CORONARY HÆMORRHAGE

By John Mackay, M D Glasg , D P M

DEPUTY MEDICAL SUPERINTENDENT OF SOMERSET AND BATH MENTAL HOSPITAL

Coronary hæmorrhage is comparatively rare and its accompanying clinical signs and symptoms are crowded into a short time The following case reveals an unusually long period between the first sign of distress and death

A woman, aged 62, had been a patient at the Somerset and Bath Mental Hospital since 1913 Apart from varicose ulceration of the legs in 1935 and 1937 she maintained fair health until May 27, 1941, when she vomited a quantity of bile stained fluid She was put to bed, given a light diet and appeared to be comfortable in the evening As she was constipated, a simple enema was prescribed on May 28 She felt fairly well on that day Her only complaint was a tight feeling in the epigastrium There was little change in her condition next day On the afternoon of the 30th she complained of severe pain in the epigastrium and almost collapsed There were clonic movements of the arms and legs She was able to converse with the staff attending her An injection of Coramine was given with satisfactory results, although the pain in the epigastrium persisted About 10 30 P M the pain became so severe that morphia was administered During the morning of the 31st she was comparatively comfortable, but occasionally had short attacks of vomiting About 1 P M she again collapsed, and died at 1 45 P M

At autopsy the pericardial sac was found to be full of clotted blood There was an area of ecchymosis, about 1 in in diameter, over the anterior branch of the left coronary artery, and fragmentation of muscle in the centre of this area , dissection revealed a rupture of the underlying vessel The interna surface of the heart was intact The mitral and tricuspi valves showed old thickening and there was evidence o aortic atheroma The coronary arteries were deficient i elastic elements and showed only slight atheromatous changes The heart muscle was of fair quality No infarcts could b discovered and there was no evidence of thrombosis Th other organs showed no gross changes

The anterior branch of the left coronary artery ha been called the " artery of sudden death " , this cas appears to be an interesting exception

I have to thank Dr W S Graham, medical superintenden of the hospital, for help in the investigation of this case

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[2] Messrs Roche Products Ltd have kindly made up ampoules containing 10 c cm of 30% sodium ascorbate solution On one occasion an ampoule has been given intravenously to an adult of average size without any untoward reaction and without causing thrombosis of the vein

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Reviews of Books

A Short Textbook of Midwifery

(2nd ed) By G F Gibberd, M S Lond , F R C S F R G O C London J and A Churchill Pp 548 18

During the three years which have elapsed since th first edition this has come to be one of our most popula textbooks of obstetrics The chapters on the toxæmia of pregnancy, disproportion and puerperal infection are especially well done, and the section dealing wit asphyxia neonatorum and the physiology of fœta respiration has been revised, in view of the researche of Sir Joseph Barcroft Mr Gibberd in his prefac warns readers of the limitations of radiology as an aid t the prognosis in a case of suspected disproportion, an emphasises the point later in the text

When he cannot be dogmatic Mr Gibberd does no grudge the space needed to set out arguments for an against, and his text is full though concise His teachin is as sound as ever

Anatomy of the Eye and Orbit

(2nd ed) By Eugene Wolff, M B Lond , F R C London H K Lewis and Co Pp 374 31*s* 6*d*

This book includes chapters on the development an comparative anatomy of the visual apparatus It beautifully illustrated, many of the drawings being mad from the author's own anatomical preparations Som of the histological illustrations are in colour, and all ar accurate and clear The text is on the whole good an authoritative There are, however some inconsistencie in the use of terms for example, the author denounce papilla as a term and then uses it The reader would b helped if the page number was given for figures referre to in other parts of the book

The Extra-ocular Muscles

(3rd ed) By Luther C Peter, M D , Sc D , LL London Henry Kimpton Pp 368 21*s*

Professor Peter rightly insists on the importance o early treatment in concomitant squint and state that the best results are obtained before the sixt year and preferably before the age of four The valu of orthoptic training is discussed in a separate chapte which outlines the basic principles of the method an gives all the information the eye surgeon needs to hel him in guiding the orthoptic technician The chapter o nystagmus has been written with the collaboratio of Dr Gaskin, and will be useful to neurologists, ophthal mologists and otologists Other chapters are concerne with normal and abnormal mobility, heterophoria concomitant squint, paralytic squint and conjugat palsies In the chapter about operative surgery th author condemns free tenotomy as an obsolete an unsatisfactory operation likely to lead to serious complications, and then proceeds to describe its technique This chapter has particular interest, however, from th account he gives of various suturing methods includin his own and Jameson's recession suture technique H has included operations for ptosis, which he admit belong to the field of ophthalmic plastic surgery but justifies their inclusion on the grounds that th levator palpebræ superioris and the superior rectus ar extra-ocular muscles Some of the illustrations ar beginning to look old-fashioned and in future edition could be replaced by others more modern and clearer

---

Captain N S Seaford, R A M C , of Harrow, is reported missing in the Middle East

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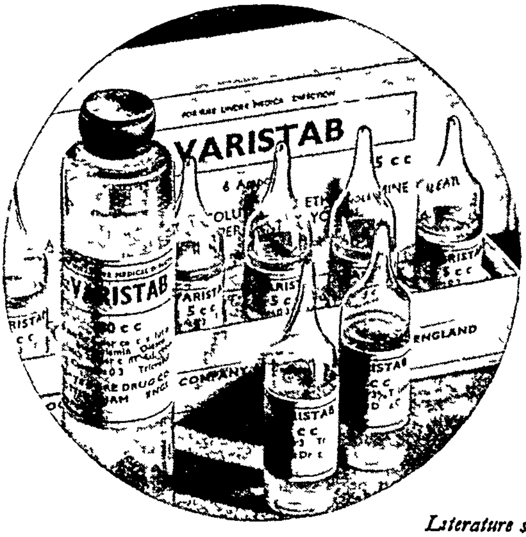

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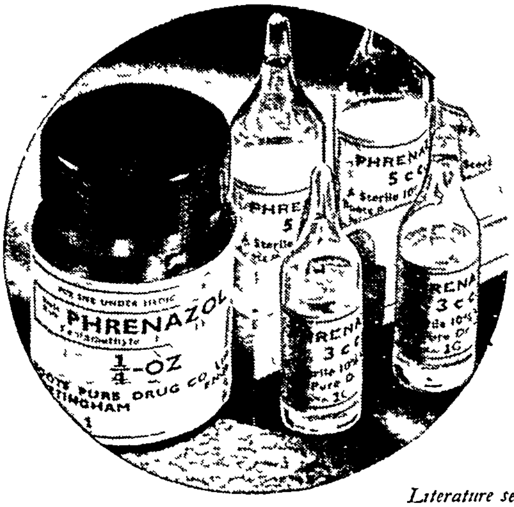

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THE LANCET

LONDON SATURDAY, JUNE 28, 1941

SIGN PLEASE

There are 64 000 names on the Medical Register annual subscriptions to the Royal Medical Benevolent Fund in the year 1940 amounted to £13.243 This is not greatly to our credit as a relatively rich profession indicating as it does that only about one in five of us finds a yearly guinea to share with colleagues in difficulties The fund moreover has suffered from the war subscriptions are less by £1292 than they were in 1938 The committee by cutting down office expenses have made a saving of £880 but to cut down such expenses means in effect, to cut down appeals advertisements and postage—to reduce the number of sprats sent out to bring in the whales On p 833 Sir **Arnold Lawson** reminds us that the falling off in subscriptions is largely due to financial losses among those who have been bombed and encourages the rest of us to show gratitude for our safety Besides the unbombed of today may be the land-mined of tomorrow The work of the fund in helping the dependants of doctors, as well as doctors out of luck is well known we all admire it and we are all glad to know it is there in case of need It is exceedingly odd that a profession with a tradition of altruism should look so carefully at the pennies before beginning a little charity at home The Honorary Treasurer s address is 1 Balliol House Manor Fields London S W 15 our cheque books are in easy reach and a word to the bank would amend our standing order

URINARY DISINFECTION

Two outstanding causes of failure in the modern treatment of urinary infections are urinary stasis and renal damage An obstructive lesion in the urinary tract may prevent eradication of the infection which may be temporarily suppressed only to relapse as soon as treatment is stopped Renal damage may hinder satisfactory excretion of the urinary antiseptic this is a well-recognised cause of failure in cases of unilateral infection, the main bulk of the drug being excreted by the healthy kidney If both kidneys are damaged and the drug is inadequately excreted toxic levels may be reached in the blood **Alyea, Daniel** and **Yates**[1] have shown that patients with impaired renal function have a lower urinary excretion and a higher blood concentration of sulphanilamide on the usual dosage and that in such patients the required blood level of the drug can be obtained on a dosage calculated from the results of renal function tests

Helmholz[2] has recently reported the results of treatment in a boy aged 16 who had bilateral infected hydronephroses with megalo-ureters and a large distended bladder, the result of a valvular obstruction in the posterior urethra The patient had a raised blood-urea and a considerable amount of residual urine for 7 years he had been treated without success by all the recent additions to the list of urinary antiseptics Using small doses of sulphanilamide (0 33 g five times a day) there was a temporary improvement, but the infection recurred even though the patient was kept on the same dose The urinary concentration of sulphanilamide was between 20 and 30 mg per 100 c cm On small doses of sulphathiazole the infection also improved and the *B coli* infection which had been constantly present before disappeared to be replaced by a pseudomonas infection Unfortunately on a dose as small as 0 25 g, three times a day, the patient developed toxic symptoms and **Helmholz** therefore reduced the dose still further He found that 0 125 g (gr 2) at first three times and later only twice a day was sufficient to keep the urine clear and the infection though not cured under good control without any general toxic effects occurring At the time of the report the patient had kept well on this small dosage for about seven weeks On 0 125 g three times a day the urinary concentration was found to be 4–5 mg per 100 c cm It would thus appear that a quite low concentration of sulphathiazole in the urine may be able to keep a chronic and apparently incurable infection in check and if such small doses can be continued for a long time without producing any secondary toxic effects this will prove a valuable advance Further, in the presence of renal damage though a full dose may produce general toxic symptoms small doses of sulphathiazole may be adequately excreted and cure or control the infection

Struck by the results of different concentrations of sulphanilamide and sulphathiazole in this patient **Helmholz** and **Larson**[3] have compared the effect, in vitro on various organisms of minimal amounts of these drugs in urine They studied concentrations of only 10–30 mg per 100 c cm since this level should be attainable even by a damaged kidney if almost full doses of the drug are given for a short time They found that sulphathiazole was definitely superior to sulphanilamide as a urinary antiseptic at these low levels Thus using concentrations of 10 mg per 100 c cm sulphathiazole was bactericidal to *B coli* in 80% and sulphanilamide in only 15% of their experiments Similar differences were noted with other organisms but *Streptococcus fæcalis* proved resistant to both drugs at this concentration Using urines containing 30 mg per 100 c cm, sulphathiazole was again superior to sulphanilamide but the differences were not so marked At this level *Strep fæcalis* was often killed by sulphathiazole though it resisted sulphanilamide This difference between the two drugs is important in the treatment of urinary infections It is probably due to an absolute difference in their bactericidal powers for while it is known that a larger proportion of sulphathiazole than of sulphanilamide is excreted in the urine in its free form it has also been shown that sulphathiazole has a greater bactericidal action when excreted than when added in equivalent amounts direct to the urine

These results lend added interest to the suggestion made recently that sulphonamide drugs should be used prophylactically to prevent the occurrence of urinary infections in patients who have to be catheterised A large series of gynæcological cases were given a routine postoperative course of sulphanilamide by a group of workers at the Mayo Clinic,[4] and they found that the incidence of urinary infection was greatly decreased More than half their cases undergoing gynæcological operations required postoperative catheterisation—a rather high figure Of those who were catheterised and who received no sulphanilamide, 50% showed definite pyuria on discharge from hospital, while of a similar group receiving prophylactic treatment only 17 8% had pyuria Unfortunately the preoperative incidence of infection was not determined and full cultural examination of the urine was not always carried out, the report being based on the amount of pus present, but the figures suggest that many cases of urinary infection were prevented Sulphathiazole has been used prophylactically by Young[5] before and after urological operations and in 12 cases, which included plastic operations, much better healing was obtained than was expected Sulphathiazole, then, appears to be the best of the sulphonamide drugs for the routine treatment of urinary infections and has three main uses to prevent infection in cases requiring catheterisation, to cure a large proportion of uncomplicated infections, and to control established and incurable infection In the prevention and control of infection a far smaller dose than that used in treatment should prove effective, and in the presence of renal failure doses as low as 0 3–0 65 g (gr 5–10) a day may be adequately excreted and should control, if not cure, the infection

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[1] Alyea E P Daniel W E and Yates A J *J Urol* 1939 41 14

[2] Helmholz H F *Proc Mayo Clin* March 5 1941, p 145

[3] Helmholz and Larson N *Ibid* p 149

LAX CERTIFICATION

Francis Bacon was deposed from the highest judicial office in the land for the gravest judicial offence In his admitted acceptance of bribes he did no worse perhaps than follow the custom of the age Three centuries later the integrity of the bench is established beyond cavil Similar progress, more speedy or more slow, can be claimed in other walks of life, and it is proof of this progress in our own profession that no-one even thinks of bribery when the General Medical Council issues a warning notice against lax certification, though, judged by some tests, a reckless want of care may be deemed as bad as fraud itself Clergymen, barristers and others are authorised by the state to sign forms for various purposes Are doctors more ready than these non-medical men to put their names to printed statements which, if they had to write out the document in full, they would study and endorse with more scrupulous care ? Are they more ready to sign on the dotted line to save themselves trouble or to oblige an applicant ? That there is some laxity cannot be denied Insurance committees complain that it is not unknown for the panel doctor to continue to certify advanced pregnancy after the insured mother has been delivered of her child Then there was the doctor who light-heartedly continued to certify incapacity for work (" I hereby certify that I have examined you on the under-mentioned date ") when the insured person was in prison, the facts duly came out and penal action naturally followed These are gross and inexcusable examples, but every insurance practitioner knows the long-incapacitated patient (or his relative) who comes on Friday for a certificate dated the previous Monday, when his doctor did not see him, and many must have committed the technical fault of issuing one

If the doctor is particularly prone to this failing the reason is not difficult to find Familiarity has bred contempt, and, still worse, repeated doses have produced a hypersensitivity to the printed document, so that the practitioner tends to face a certificate proffered to him not only without interest but with irritation The medical student is no respecter of authority, and little attempt is made to teach him respect for the laws of certification Early in his qualified career he is, as a house-officer, expected by tradition to sign certificates of incapacity handed him in a heap by an outpatient or ward sister, and he signs them because he has full trust in her judgment and knows them to be true in spirit though not necessarily in letter This is the kind of compromise between convenience and exactitude that makes the working of a hospital possible, and it is not surprising if the young doctor carries the principle with him into practice outside There he is faced with a mass of " certificates, notifications, reports, and other documents of a kindred character," to quote the Medical Register, many of which require much thought and skill in their completion and carry but a small fee, if any Much of what he is expected to certify must necessarily be " to the best of his knowledge "—he has often only the patient's word, for instance, that his name and address are as stated, and is not expected to verify these from the parish registers or a personal visit Sometimes, when pressure of work is at its heaviest, he must choose between being a careless certifier and a careless doctor, and such is his training that he will choose the former every time

When officials and lawyers design new certificates for doctors to sign they must remember, then, that they are to be completed by men and women with no legal training and a point of view which puts other considerations before legal ones, who have neither time for nor patience with long-winded documents, and who may tend to give the benefit of a doubt to the patient whom they know rather than to an insurance company or other body which is but a name to them Some existing certificates might well be revised to save abuse—for instance, the familiar N H I certificate already quoted might read simply " So-and-so was incapable of work on " When this is said, however, it is up to the doctor and those responsible for training him to remember that these tiresome papers are legal documents and that anything they contain may later have to be justified on oath The authority to certify in various statutory circumstances is one of the few privileges which distinguish the registered from the unregistered practitioner It would be a pity if we showed ourselves unworthy to retain it

SURGICAL TREATMENT OF RETINAL DETACHMENT

It is 12 years since Prof Jules Gonin of Lausanne showed that a detached retina could be effectively replaced by sealing any tears in that membrane and producing an aseptic *choroido-retinitis* at the site of the lesions, thus uniting the sclera, choroid and retina by adhesion This end has been achieved by various means The first step is a thorough survey of the fundus oculi, careful drawings being made of lesions and of the vascular pattern particularly in the neighbourhood of any retinal tears, so that these may serve as ophthalmoscopic landmarks during operation. Several such examinations each lasting about three-quarters of an hour should be made, with the patient in different positions so that a retinal tear cannot escape detection or be obscured by a retinal fold. Full mydriasis is essential in cases suspected of small holes in the region of the ora serrata and gentle instrumental compression of the sclera may be necessary at the suspected site to make these visible through the ophthalmoscope. The position of the retinal tear is assessed in terms of the meridian in which it lies, and its distance from the ora serrata is judged in optic disc diameters (1 diameter = 1·5 mm.). Surgical diathermy can be applied either to the surface of the sclera by a blunt applicator, 2·5 mm. in diameter or more directly to the choroid and retina by a perforating needle of requisite length (1–2 mm. or more). A combination of these two methods is now generally favoured, the former being used to produce an area of thermocoagulation which shows up white on ophthalmoscopic examination and hence helps to verify the site of the retinal tear and induce an aseptic choroido-retinitis around its edges. Perforating diathermy permits the escape of the inter-retinal fluid between the rods and cones and the retinal pigment epithelium. Two things are essential to success: the production of an adequate local thermocoagulation of the retina and choroid around the site of a retinal tear, and the evacuation of the inter-retinal fluid so that the two membranes can come together and adhere securely.

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[4] Emmett, J L and Hammer H J *Ibid*, 1940, 15 801, Wilson R. B and Masson, J C *Ibid*, p 806

[5] Young, H H, Hill, J H and Semans, J H *J Urol* 1940, 44, 714

The initial evacuation of inter-retinal fluid by perforating diathermy and suction aspiration through the fine holes produced in the ocular tunics is still under discussion. Those in favour of this procedure claim that by removing the fluid both the retina and the choroid are assured of effective local thermocoagulation around the site of the retinal hole. Its disadvantages are that it renders the eye soft and distorted so that the application of diathermy, whether perforating or at the surface, may be difficult and sometimes inaccurate. Moreover, leakage of inter-retinal fluid moistens the sclera and thus lessens the effect of surface diathermy. Probably the best method at present lies in a compromise. Surface diathermy is used initially for localisation, and efforts are made to produce the desired response in both retina and choroid. Later the sclera and choroid are punctured by the perforating diathermy needle, inter-retinal fluid is removed by gentle suction, and a few more perforations are made so that the needle point operates in the retina around the site of the hole. This work must be done with just the amount of diathermy current necessary to induce the degree of thermocoagulation judged capable of forming secure choroido-retinal adhesions. The strength of current necessary to achieve this varies in different subjects, because their bodily electrical resistance varies. In some, 70–80 mA. for 7 seconds is sufficient, while others need 120 mA. for the same time. Too heavy an application of diathermy may cause exudate and cellular infiltration into the vitreous, damaging it considerably; too little may produce a choroido-retinal adhesion which will not hold, so that retinal detachment recurs. Good postoperative nursing is a large factor in success. As a rule the head should be placed so that the retinal tear and the adjacent diathermy perforations are in the most dependent position possible. The retina and choroid thus remain apposed and any residual inter-retinal fluid drains away. Some however believe that posture is of no account provided the head is kept still. Technical modifications will probably be made in both the apparatus and the surgical technique, and thus increase the scope of an operation which already allows us to restore vision in a disorder which not long ago had a hopeless prognosis.

Annotations

A RE-DRAFT OF THE DRUG BILL

THE bill to repeal the medicine stamp duties as originally drafted has been amended in several important respects. It is understood that an entirely new clause has been inserted which will correct the anomaly, pointed out in THE LANCET of June 14 (p. 762), by which a grocer was to be allowed to sell recommended remedies of unknown composition and not those whose composition had been declared. The objection has been met by a draft clause requiring disclosure of the composition of medicines whether proprietary or non-proprietary.

> "No person shall sell by retail any article consisting of or comprising a substance recommended as a medicine unless there is written so as to be clearly legible on the article or a label affixed thereto, or, if the article is sold in any wrapper or container, on the wrapper or container or a label affixed thereto, either (*a*) a statement of the composition of the substance or of the active constituents thereof; or (*b*) in the case where the substance is described in any of the monographs contained in the edition of the British Pharmacopœia or British Pharmaceutical Codex which was last published before the date of the sale, either such a statement as aforesaid or the description, or an abbreviation or synonym of the description set out at the head of that monograph."

This would not apply to medicines supplied by doctors or dispensers on a doctor's prescription, but it would apply to medicines supplied by way of counter-prescribing by a pharmacist. While it has become a fairly common practice among owners of proprietary medicines to give some indication of the composition of their products, the practice is by no means universal and is not enforceable by law. The insertion of this clause in a bill which was intended to appear before Parliament as a measure agreed upon by the parties interested in the manufacture and distribution of proprietary medicines would probably come as a surprise to the trade, and although the majority of owners of proprietary articles, faced by Hobson's choice, may decide that it would be useless to oppose it, it is doubtful if they are pleased about it. They will find some consolation in the fact that the bitter pill is gilded by the proposal to allow their medicines to be distributed through all the usual channels free of tax.

The bill as redrafted contains other provisions which can hardly have been expected by the parties concerned. Thus the sale of recommended non-proprietary medicines would not be restricted solely to pharmacists, but would be allowed in the case of "a person who has served a regular apprenticeship to a registered pharmacist, or to a body corporate authorised to sell poisons by virtue of section 9 of the Pharmacy and Poisons Act 1933." The sale of such medicines would also be allowed in the case of a person who is at present carrying on business on his own account "which consists of or includes the selling of drugs." There is no provision for the transference of this privilege to the purchaser of a business. A mild form of concession is made to herbalists by a provision which allows the sale of a recommended medicine which consists of "a substance produced by drying, crushing or grinding (but not subjected to any other process) a plant or plants of a single species or any part thereof" Apparently it would be lawful for a herbalist to recommend a packet of horehound as a remedy for some condition, but not a mixture of horehound and coltsfoot Many members of Parliament may find the verbiage of some of the new clauses hard to understand, and not the least difficult of the tasks thrown on the Minister of Health will be to explain to the House precisely what the bill means

MOTHERCRAFT FOR SCHOOLGIRLS

In 1909 Miss Florence Chapman, headmistress of a girls school in Tottenham, began to give instruction to her pupils in what is now known as mothercraft This word Miss Chapman claimed to have invented, though some think it was coined earlier by J F J Sykes when medical officer of health for St Pancras No doubt the time had come for the pleasant and convenient word to be born , and perhaps it sprang full blown to the lips of several people about that time At all events it did *not* arrive in time for the letter M in Big Murray, published in 1908, and had to wait for definition in the Supplement (The "craft" or business of a mother , a mother's duties in the family) with the first quotation from the *Times* of 25 April, 1914 Some years later Miss Chapman's girls were able to give in Westminster a convincing demonstration and to answer unprepared questions on washing the baby, mother's milk, and dangers and how to avoid them

Instruction in mothercraft was recommended by the Board of Education in 1910 and again in 1925, when Dame Janet Campbell, in a circular issued by the board, advised all mistresses responsible for girls approaching the end of their school life to "consider what teaching such girls may properly receive in the management of infants and little children" Sir George Newman was another advocate of such teaching In his report of 1928 on the health of the school-child he said "If the schoolgirls of this generation are to become the wise mothers of the next, they must be taught the elements of mothercraft" Wherever such teaching was introduced it became an immensely popular subject—a result hardly surprising when it is remembered how many schoolgirls in poorer homes are forced by circumstances to help in the care of their younger brothers and sisters Yet somehow education in mothercraft does not seem to have caught on in general , as late as 1937 the joint executive committee of the recently amalgamated National Association of Maternity and Child Welfare Centres and for the Prevention of Infant Mortality found it desirable to appoint a mothercraft teaching subcommittee to consider what steps should be taken "to ensure that no girl should achieve motherhood without having had adequate practical instruction in mothercraft" For two years Dr Agnes Nicoll conducted a mothercraft class at Kilburn Polytechnic Evening Institute, and though war conditions have caused the class to disperse, her syllabus and list of equipment have formed the basis for the regulations accepted by the N A M C W C & P I M , which has constituted itself a national examining body in the subject The syllabus provides for two courses, one for women and girls over 16, the lectures and demonstrations to be given by doctors, nurses and health visitors, and the other for schoolchildren under 16, the instruction usually to be given by nurses with health visiting experience Emphasis is laid on the fact that the classes only aim at qualifying girls to become happy and reasonably efficient mothers at present the teaching given in welfare centres comes too late, and is largely wasted because it has been preceded by the unskilled advice of mother or mother in law The maternity and child welfare group of the Society of Medical Officers of Health devoted its first meeting of the year (held on March 29) to a discussion on the national teaching of mothercraft Dr Leslie Hous expressed the belief that to educate girls of 12 to 1 mothercraft would result in a larger saving of expe ture on hospitals, juvenile courts, approved schools prisons Dr Nicoll advised expert teaching, prefer by one conversant with the type of homes from which pupils are drawn, besides being well informed in subject She believes that sixty years ago girls of classes had the opportunity in their own homes of acq ing a working knowledge of housecraft and mothercr This is debatable , in many well to do homes the sub of childbirth and even care of the baby were matter secrecy, and the girl of 12–14 knew nothing whate of the simplest facts concerning them, while the gir the poorer home presumably imbibed the ignora which the welfare centres now strive to combat

Evidently there is room for much extension in teaching of mothercraft, and probably the teacher is most important element in the scheme whether sh doctor, nurse, health visitor or a member of the ordin teaching staff, it is essential that she should poss special knowledge and experience and the capacity make acceptable contact with her pupils

SULPHUR AND SULPHANILAMIDE

Cyanosis following upon the administration of sul anilamide or one of its derivatives is most commo due to the presence of methæmoglobin in the blood may, however, be due to sulphæmoglobin which un methæmoglobin is *not reconverted into hæmoglobin* the blood, but remains in the red cells until these destroyed Since sulphæmoglobin cannot transp oxygen, the presence of a large proportion of it m seriously deplete the oxygen carrying power of the bl for a long time The work of Snapper[1] and van Bergh and Wieringa[2] makes it probable that sulphæ globinæmia results from the action of sulphuret hydrogen, absorbed from the intestine, on the hæ globin of the blood in the presence of oxygen and o catalyst Sulphanilamide and its derivatives act such catalysts Sulphuretted hydrogen is formed the large intestine by bacterial decomposition of f residues Archer and Discombe[3] suggested that intake of eggs should be limited to one or two daily low residue diet given and aperients forbidden T object of limiting the eggs was to reduce the amou of sulphur in the food residues of the large intesti Sulphur, however, is contained in protein, and amino acids resulting from the digestion of protein believed to be absorbed in the small intestine Arch and Discombe forbade aperients, especially magnesiu sulphate, and prescribed a low residue diet with t object of reducing the water content of the food residu in the large intestine and thus discouraging bacter decomposition Purgatives, especially magnesium s phate, increase the amount of liquid in the large intesti and hurry the contents of the small intestine into t large intestine before absorption is complete

Richardson[4] has studied the effect of diet upon t incidence of sulphæmoglobinæmia in mice To differe groups of mice he gave a basic diet containing ve little combined sulphur, and added different sulphu containing compounds in such proportions that t amount of sulphur added was in each case the sam Other groups of mice, having the same basic diet wi the same additions, were given 2% of sulphanilami mixed with the food Fourteen days later he found th the animals receiving only the basic diet had an averag of 4 9% of sulphæmoglobin in the blood The additio of magnesium sulphate and of thiourea to the diet ha produced no appreciable increase in the amount sulphæmoglobin formed The addition of sodium thioglycollate, of albumin containing casein and of cysteine hydrochloride caused the proportion of sulphæmoglobin to increase to 8–11% The addition of sulphur, sodium thiosulphate or potassium polysulphide caused the formation of 15–23% of sulphæmoglobin The dosage of sulphanilamide employed represents, in the case of a human being, about 20 g daily for fourteen days In view of this very high relative dosage and of the fact that even the animals receiving the basic relatively sulphur free diet developed 4 9% sulphæmoglobin the relevance of these results to human therapeutics is doubtful The only conclusion that can be drawn is that foods containing sulphur are more likely to produce sulphæmoglobinæmia Clinical experience suggests that, provided purgatives are avoided, sulphæmoglobinæmia is rare with sulphanilamide therapy, even without restriction of diet

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[1] Snapper, I *Ned Tijdschr Geneesk* 1922 66 2 41
[2] van den Bergh R and Wieringa H *J Physiol* 1925 59, 40
[3] Archer H E and Discombe G *Lancet* 1937, 2 432
[4] Richardson, A P *J Pharmacol* March, 1941, p 203

HOUSING AND DISEASE

OVERCROWDING in the home is so interwoven with other factors of importance to health—nutritional andards, occupation, and so on—that it is an almost opeless task to measure the effects of crowding by itself he difficulty of so doing is not underrated in a paper y Britten and Altman[1] Using the results of the National Health Survey, a house-to house canvass covering ½ million persons, they find, as would be expected, a ing sickness rate as the degree of crowding in the home creases Limiting attention to specific income levels, here is a distinct relation between crowding and acute llness, but virtually none between crowding and chronic llness That at least some of the former resulted irectly from bad housing seems a reasonable conclusion Of particular note is the rise in the incidence of pneumonia, especially among children Rather more surprising is the close association between degree of crowding and he frequency of influenza, for in urban communities nfluenza has usually appeared to be no respecter of persons or conditions of life More in keeping with previous work, but none the less important, are the observations on the incidence of the common infectious diseases of childhood With the curious exception of whooping-cough, each increases its rate as the home becomes more crowded—diphtheria par excellence—and in the more crowded homes each tends to fall in the age-group under 5 rather than at 5–9 thus increasing the risks of complications and death Lastly, the probable effects of poor housing are shown by a higher incidence of home accidents in houses of low rental, and an excess of digestive diseases among those who do not enjoy the use of a private indoor flush lavatory No one will quarrel with the conclusion that these observations at least demonstrate that an excess of illness falls on those least able to meet the burden

OCULAR COMPLICATIONS IN HYPEREMESIS

THE effects of the severe and continued vomiting in hyperemesis gravidarum fall into two main groups—metabolic disturbances, such as anhydræmia, uræmia and acidosis, and neurological disturbances, such as peripheral neuronitis and evidences of Wernicke s encephalopathy including its ocular manifestations The neurological conditions, which are of grave significance and account for the majority of the deaths, are usually ascribed to a deficiency of some vitamin either B_1, nicotinic acid or an unidentified one The ocular complications have lately been described in detail by Ballantyne[2] The current description of these is of partial or complete loss of vision associated with retinal hæmorrhages and optic neuritis, occurring in a patient who is seriously ill from hyperemesis As a rule their appearance indicates that the patient will die within a few days, but if she recovers the sight returns fairly quickly to normal Ballantyne maintains that this description is incomplete and misleading He says that the earliest ocular disturbance is a retrobulbar optic neuritis associated with a central defect in the field and without visible ophthalmoscopic changes This is succeeded by a visible œdema of the optic nerve and later by a characteristic type of peripapillary retinal hæmorrhage with total or almost total blindness Ballantyne records a case in which he observed the progress of this series of changes in the eye He also records five others in which the retinas were examined at the first onset of dimness of vision Even at this first clinical danger signal two of the patients showed lesions corresponding to his third stage, one to his second stage, and only two to his first stage There is no clear proof that the former three of these cases had actually passed through any preceding stage of Ballantyne's classification or that the latter three cases went through any subsequent stage The evidence for a serial development of the ocular complications is thus not yet sufficient Nevertheless it is clearly important that frequent ophthalmological examinations should be made in every patient with severe hyperemesis particularly if the warning triad of gross tachycardia tenderness of leg muscles and nystagmus has appeared, and even if the patient has stopped vomiting If it proves that the ocular disturbances are not of very rapid onset, but have a preclinical stage which can be recognised by an ophthalmologist, an additional indication could be obtained for the interruption of pregnancy before the full development of Wernicke s encephalopathy The relation of these ocular manifestations to Wernicke's encephalopathy is also discussed by Campbell and Russell,[3] who report impairment of visual acuity in three of their nineteen cases of this disease in nonpregnant patients One of these had bilateral central scotoma and papillœdema, and two of them had focal degenerative lesions in the optic nerves demonstrated at autopsy A fourth patient had papillœdema but her visual acuity could not be tested None of their cases had retinal hæmorrhages, and they say that, as far as they know, these have not been found in Wernicke's disease complicating conditions other than hyperemesis This observation taken in conjunction with certain clinical differences suggests that the total basic ætiology of the Wernicke's encephalopathy in hyperemesis may be different in some respects from that of the encephalopathy in other conditions The patient with hyperemesis is not only not taking food but is presumably having her stores of certain vitamins rapidly drained by the developing fœtus The value of vitamin therapy is however, not yet established, one of Ballantyne's patients was given 1 c cm of Betaxan intramuscularly every day for 13 days, but at the end of this time she developed partial blindness and retinal hæmorrhages Hyperemesis is one of the few causes of Wernicke s encephalopathy that are not necessarily fatal and an early and efficient treatment for these cerebral, ocular and nervous complications in hyperemesis would thus be of the utmost value

WHAT ARE WE AIMING AT IN COLLAPSE THERAPY?

IN all disease the aims of therapy are roughly three to arrest the progress of the disease, heal the damaged tissues and restore the general health and working capacity of the patient Dr S Vere Pearson, addressing the North Western Tuberculosis Society at Manchester on May 8, pointed out that there was more chance of a clash between these aims in the treatment of tuberculosis than there was with other maladies The question of what to do was often less important than that of when to do it The constitutional effects of pulmonary tuberculosis, because they may jeopardise life and health, are more important than the local effects yet it is the damaged lung which generally rivets attention The infection produces changes in the connective tissue matrix of the lung which are still obscure We are still far, he said, from understanding the effects of ischæmia, passive hyperæmia and lymphatic stasis on the proliferation of connective tissue and the production of fibrosis

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[1] *Publ Hlth J* 1941 p 609

c 1941, 48 206

[3] Campbell A C P and Ritchie Russell W *Quart J Med* 1941 10 41

Collapse therapy relieves tension not only in grossly diseased and excavated parts but in less obvious lesions, and the diseased areas are quick to take advantage of such relaxation The aim of collapse therapy, he considers, should be to get a re expanded healed lung in the end, whenever that is possible, and the best induced collapse is always a selective one This was not fully recognised in the early days of collapse therapy, but all advances in collapse methods have been made by bearing this principle in mind Nowadays experts plan their treatment to achieve selective re expansion One of the drawbacks of an extrapleural pneumothorax, he finds, is that when it is let out the diseased parts re expand and fill the space there is no way of getting neighbouring healthy areas to take up the slack, so to speak, as can be done with an ordinary pneumothorax Instead, the procedure has to be followed by plombage or thoracoplasty He considers that observations should be made on the effect of movement in collapse therapy, with the aid of the cinematograph In dealing with cavities, collapse therapy can be used to advantage because it closes the bronchocavernous passage, reduces and stabilises the pressure in the cavity, and starves and debilitates the tubercle bacilli in the cavity walls Since 1930 he finds attention has veered from the cavity itself to the walls, and thence to the opening and passages leading to it

Dr Pearson was the first in England to introduce a thoracoscope into the chest[1] and the first to introduce a hollow needle—wittingly—into a cavity For the past twelve years he has studied the condition of the bronchial opening into cavities, and intracavernous pressures. He mentioned Caryllos's classification of cavities into open, closed and narrowed The narrowed, and especially the valvular passage-ways are proving to be commoner and more important than was thought at one time When a cavity is present the efficiency of a pneumothorax is to be measured, he thinks, by its success in closing the passage Various surgical procedures can close a passage by kinking it, or closure may occur in other ways. He mentioned the technique, now being used more freely, of closure by means of a balloon introduced through a bronchoscope When a cavity becomes blocked the anoxæmia produced, according to some authorities, upsets the bacilli more than their host Though it is a laudable aim to get rid of tubercle bacilli in the sputum, Dr Pearson considers it to be a secondary one, a well-trained, well-behaved and sensible patient will not spread disease Occasionally patients with positive sputum are restored to working capacity, which might not have been achieved if they had been surgically treated They make a truce with their bacilli and live long a life of symbiosis with them

TUBERCULOUS PERICARDITIS

THOSE who had experience of casualties during the last war were uniformly impressed by the heart's power of resistance to septic infection, cases riddled with fulminating infection were found at necropsy to have no direct involvement of the heart In view of the wide spread distribution of pulmonary tuberculosis it is equally surprising that the heart and pericardium are so seldom attacked by the tubercle bacillus According to Kornblum and his colleagues,[2] the incidence of tuberculous pericarditis in general necropsies is about 1%, while in patients with pulmonary tuberculosis the necropsy incidence of pericardial involvement is only 4% When such infection is found, it is either part of a miliary spread or a result of direct spread from a tuberculous mediastinal lymph-gland Direct spread from the pleura or lungs scarcely ever occurs Hannesson[3] in a recent review of the subject reminds us that there is nothing distinctive about tuberculous pericarditis except that the effusion is occasionally hæmorrhagic The condition is usually suspected from the presence of the characteristic pericardial friction but signs of a pericardial effusion in a patient with miliary tuberculosis or in a patient with a wasting illness of indeterminate origin, should always suggest it The age-incidence has clinical significance tuberculous pericarditis is more likely to occur after the age of 40, in contrast to rheumatic pericarditis which, of course, is almost entirely confined to childhood or early adult life All observers agree on the difficulty of diagnosis in most cases, even guineapig inoculation is not always successful in isolating the tubercle bacillus The mortality is high, most patients dying within 2–4 months, in Keefer's series[4] of 20 cases 18 died

The relationship between tuberculosis and constrictive pericarditis has practical importance Most workers consider that some at least of the cases of constrictive pericarditis are tuberculous in origin Thus White[5] found that of his 15 cases 2 were definitely and 2 possibly tuberculous, and 16 of Burwell and Blalock's 19 cases were tuberculous[6] Fischer,[7] on the other hand, found no evidence of a tuberculous origin in any of his 8 cases Armstrong[8] has demonstrated the pathological changes produced in the pericardium In non constrictive adherent pericarditis the fibres are slender, the area of fibrosis relatively thin and the fibrotic pericardium much more vascular than in the constrictive type, where the adherent pericardium is thicker, denser and tougher, and contains large thick collagen fibres which give it microscopically more the appearance of fibrocartilage than normal granulation tissue These changes are identical with the end-results of tuberculosis, though in his 10 cases a definite tuberculous origin was only proved in one We must therefore differentiate more carefully two main types of tuberculous pericarditis a slow, chronic type which may occur at any age, but more commonly in the earlier decades of life, and which does not prove immediately fatal but progresses in some cases to the stage of constrictive pericarditis susceptible of surgical treatment, and a more acute form with a higher age incidence, usually progressing rapidly to a fatal termination There must be others who acquire a low-grade tuberculous infection of the pericardium, never detected clinically, which settles down leaving in its train no permanent sequelæ

BIRTHDAY HONOURS

To the list of honours conferred on members of the medical profession (see p 800 of our last issue) should be added the O B E to Dr Paul Boffa, district commissioner for Malta, and the Kaisar-i Hind Medal to Dr Lydia Torrance Allen, F R C O G, superintendent of the Lady Dufferin Hospital at Calcutta We regret the slip by which Dr F S Hone's name was displaced from the heading C M G under which it belonged

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Special Articles

HOSPITALS AND GAS

RECEPTION AND MANAGEMENT OF GAS CASUALTIES

SHOULD the enemy employ gas the medical services would inevitably be heavily taxed and the hospitals would be confronted with a variety of new problems both clinical and administrative. Some of these must remain unforeseen; for others past experience and other sources of information provide a solution. As with bombing so with gassing modifications of plan and method in respect of the collection, transport, hospital treatment and evacuation of casualties would evolve from experience derived in new situations. In the meantime it must be considered urgently necessary to establish a state of preparedness in every suitable hospital in the country for such contingencies as can at present be visualised. Such preparedness demands thought and action and training, but need not involve any undue elaboration or expenditure. Much information and instruction has already been issued on decontamination and the treatment of the individual case. Outside the hospitals training and preparation should by now be well advanced. The present notes relate to organisation within the hospital.

In every hospital capable of receiving casualties there should be at least one physician whose duty it would be to take charge of the reception, sorting and care of gas cases. From the available manuals and other literature and attendance at lectures or courses, he should make himself acquainted with the essentials of diagnosis and treatment. He should hold himself responsible for the instruction of house-officers, sisters, nurses and orderlies, and, in the teaching hospitals, of students in the methods of treatment advocated for casualties due to both the vesicant and pulmonary irritant gases; where staff is short the coöperation of dental surgeons for assistance with oxygen therapy and apparatus could also be sought. In conjunction with the medical superintendent or medical officer in charge he should ensure the arrangement and equipment of the hospital decontamination centre. He should personally supervise the training of a decontamination unit (male and female). He should acquaint himself with the storage, source and reserve sources of supply of oxygen cylinders, and should procure or improvise* sets of apparatus for the distribution of oxygen from one cylinder to several patients. He should ensure that all those likely to be concerned understand the use of the nasal catheter, the B L B mask, the spectacle-frame outfit, and fine-adjustment valves and flowmeters, and that there is a sufficient supply of all of these and of rubber connexion tubing and glass connexions.

As with wounds so with gas casualties "reception and management" may be held to cover decisions in relation to (*a*) the initial reception and sorting of cases, (*b*) the grouping or separation of cases into categories for special treatments, (*c*) the disposal of cases, including suitability and optimum time for transportation elsewhere of special types of case. Such decisions clearly require different consideration and arrangements in the case of vesicant and pulmonary irritant casualties.

VESICANT GASES

Although every hospital should have its decontamination centre and a trained decontamination unit it should not, given good coöperation on the part of the public, the A.R.P. services and first-aid posts and cleansing centres, be called on to deal with the generality of mildly or moderately contaminated cases. It should, however, expect to handle severely contaminated cases (liquid), or people who have been recently contaminated (liquid or vapour) when without gas mask or otherwise inadequately protected; cases of simultaneous wounding and gassing; and its own personnel who have been exposed in or in the neighbourhood of the hospital. Of such cases once they have been decontaminated and have received initial treatment for skin and eyes, it should be possible (when necessary) to evacuate the majority as stretcher or sitting cases forthwith or at an early date, excepting only those whose associated wounds are so severe as to preclude movement.

During the hours or days following a local gas attack it is probable that other cases than those in the above categories would begin to arrive for treatment of developed lesions. Minor skin and eye cases could be treated as outpatients, or, if desirable on other grounds, evacuated. Admission might be necessary for severe or extensive skin lesions; for such cases a good supply of cradles is necessary. Again, however, the evacuation of most of these, excepting the more severe bronchopulmonary cases, would generally be justifiable. These latter cases would be in a stage in which further decontamination by washing would no longer be necessary, or, in fact, of any value. In the case of people recently gassed and suffering from wounds and wound-shock, decontamination should not go beyond careful undressing with free use of scissors, attention to exposed parts, initial treatment of the eyes, and cropping of hair if liquid contamination is suspected. Once undressed and so treated patients would no longer present any dangers to those working in the operating-theatres or to other patients or personnel in a ward.

PULMONARY IRRITANT GASES

Phosgene casualties on or soon after arrival may be conveniently sorted into mild, moderate and severe categories. The mild cases (perhaps 50% or more of the admissions) may present themselves with such symptoms as cough and tightness or pain in the chest, but the colour is good, the rate and quality of the pulse are not greatly if at all disturbed, there is little or no dyspnœa, no cyanosis, and no physical signs of pulmonary œdema. Such cases should be treated in a separate ward, or, if weather and war conditions permit, in tents or marquees, on balconies or otherwise in the open. They can be nursed on stretchers if beds are not available. They should not be allowed to exert themselves or to get up; they may be given fluid nourishment as required and mild sedatives.

Moderate cases will show the same symptoms in more severe degree with the addition of more tightness in the chest, dyspnœa, and perhaps slight degrees of cyanosis. They can be similarly treated and further benefited by the administration of pure oxygen from an ordinary nitrous-oxide bag with small easily movable cylinders for a few minutes at a time every quarter of an hour. In this way one nurse or orderly can take charge of some dozen cases. Once a sufficient improvement is manifest, oxygen therapy can be discontinued. Should any case, on the other hand, deteriorate in spite of these measures, continuous oxygen therapy should be immediately instituted.

Severe cases (perhaps 20% or less of the admissions) show urgent dyspnœa. Blue or grey cyanosis may be present or appear, often with auscultatory signs of pulmonary œdema or with actual expulsion of froth from mouth or nose. There may be collapse with feeble pulse, low blood-pressure and cold extremities. These patients should be treated from the first with continuous oxygen given in sufficient quantity to maintain a pink colour. It may be necessary to continue the treatment for 24, 48 or even 72 hours. The closest watch must be kept on such cases and on the efficiency of the cylinders and oxygen-feeding apparatus. It may be necessary to raise the feet and lower the head to facilitate the escape of œdema fluid. Ideally no patient who is known to have been exposed to phosgene gas or who presents indisputable symptoms should be evacuated to a distance or otherwise than as a stretcher case for 48 hours. Exertion may bring on serious symptoms in a patient previously but little affected. No case requiring continuous oxygen is likely to be fit for evacuation in under a week. Absolute rest, fresh air, oxygen, posture, adequate fluids and good nursing are the essentials of treatment. The segregation of the severe from the mild cases is important from the psychological point of view as well as to ensure effective supervision and treatment.

* * *

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There should be a weekly drill in reception, decontamination and oxygen therapy employing personnel as patients All hospital personnel should be instructed to keep their gas masks near their place of work On one day in each week all personnel should wear and work in their gas masks for a quarter of an hour All personnel should carry A G No 2 ointment with their masks

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* A note on inexpensive improvised distribution is in preparation

MEDICINE AND THE LAW

Divorce for Incurable Unsoundness of Mind

POINTS about divorce for incurable insanity continue to require decision The Herbert Act allowed a petitioner to apply on the ground that the respondent was incurably of unsound mind and had been continuously under care and treatment for at least five years preceding the petition A person of unsound mind was to be deemed "under care and treatment" if detained "in pursuance of any order or inquisition" under the Lunacy Acts or while receiving treatment as a "voluntary patient" under the Mental Treatment Act of 1930 if the voluntary treatment followed without interval a period of such detention under the acts But nothing was said about the patient whose detention began as a period of "temporary treatment" under the 1930 act *Temporary treatment, like voluntary treatment, begins without* any reception order

Light was thrown upon this aspect of "care and treatment" in Benson *v* Benson a few weeks ago The wife was received at the county mental hospital at Chester on Sept 29, 1933, for temporary treatment Temporary treatment, according to the 1930 act, lasts six months but may be extended for three months by direction of the Board of Control where it is anticipated that the patient "will not recover within the six months but his early recovery appears reasonably probable" On application, the board extended the six-month period for a further three months from March 25, 1934 On the following May 29 the wife was discharged relieved from the Chester hospital and was admitted as a voluntary patient at the county mental hospital at Lancaster She remained continuously in the Lancaster hospital for the necessary statutory period of five years and was still there at the date of the husband's petition for divorce

It was argued for the wife that there was no five-year period of "care and treatment" because there was no preliminary "order or inquisition" under the acts Her original reception at Chester had been as a voluntary patient and the 1930 act expressly declares that the reception of voluntary patients is to be "without a reception order" The court, however, discovered an "order" in the directions whereby the Board of Control had sanctioned the three-month extension The subsequent treatment for the extended period could be reckoned detention "in pursuance of an order" under the 1930 act, and the voluntary treatment at Lancaster followed without interval this period of detention Thus the statutory conditions of "care and treatment" for five years were complied with, and the husband was entitled to a decree nisi

Alleged Nuisance from Flies

At Boston county court not long ago a lady complained that debris including decayed meat had been dumped on the defendant's land and had caused a bad smell and a plague of flies She suffered in consequence, she said, from septic tonsillitis, and she asked for an injunction and damages The judge went to view the premises and found that the alleged smell had ceased The plaintiff could therefore not have an injunction, this remedy is available only where there is existing or immediately threatened injury There was no proof of the dumping of decayed meat and thus the main question was whether her illness was due to flies which came from the defendant's land The court heard evidence that septic tonsillitis was a streptococcal infection spread by flies, but the judge commented on the omission to take a swab of the plaintiff's throat or to make any bacteriological test of the debris dumped on the land There were too many missing links in the chain of causation between the flies and the illness He therefore dismissed this part of the claim (with the item of medical expenses) but awarded a small sum of damages for the general diminution of ordinary comfort caused by the defendant's use of his property

SCOTLAND

NUTRITION IN WAR-TIME

AT a conference held in Edinburgh on June 7, under the auspices of the Edinburgh branch of the Children's Nutrition Council, Sir John Boyd Orr spoke of food as a munition of war A vitamin-deficient man, he said, was a despondent man Germany lost the last war partly because the morale of her people was undermined by inadequate diet, and the first objective of the Government should be to ensure that a diet fully adequate for health was available for the whole population By "adequate" he meant not merely enough to satisfy hunger, but a properly balanced diet There must be a suitable agricultural and import policy, and we must work and plan now to create a public demand for the right food The Government had already introduced the free and cheap milk schemes and was fostering allotments Cheap milk must be made available to all children and adolescents, and milk production should be increased even at the expense of other foods Communal feeding had a place not only as a war measure but as a permanent institution in the form of increased school feeding, British restaurants, and industrial canteens By way of such centres scarce foods could be directed where they were most needed War-time incomes and prices should be studied, and changes in either prices or incomes must be pressed for whenever they were needed

Mr F Le Gros Clark, secretary of the Children's Nutrition Council, considered that the limited cargo space in ships should be allotted first to grain and vegetable oils, and then to dried milk and cheese Although there were nearly a million allotments in the country most town workers still had no access to land Excessive hours of work and transport difficulties prevented many industrial workers from getting allotments He suggested that it might increase efficiency to reduce factory hours to 50 a week and thus allow time for men to work in the open air growing food for their families The cooperative societies were not getting a square deal out of food control because the Ministry of Food controllers were drawn from big private food concerns The cooperative societies would not maintain their rightful place by moral rectitude alone, they must reorganise to meet the new situation Local authorities were lagging far behind the Government over communal feeding The Ministry of Food was pressing for communal restaurants and was prepared to repay capital costs, but it was doubtful whether more than 1 or 2% of the public were being communally fed He quoted figures from a survey just published by the Edinburgh branch of the council out of 76 poor families in Edinburgh, at the end of 1940, only 8 were spending enough on food for an adequate diet The B M A minimum diet for a man which was estimated as costing *5s 11d* a week in 1933, cost 12*s* 6*d* in November, 1940 Over half the families surveyed were living above their incomes and running into debt He urged that frequent surveys should be made all over the country, to reveal changes in food habits and thus give an opportunity for deficiencies to be made up

GUNSHOT WOUNDS

In his Honyman Gillespie lecture in Edinburgh recently Prof Sydney Smith said that all medical men ought to have a working knowledge of gunshot wounds since their special evidence was usually accepted in a court of law, and human life might be at stake They should be able to recognise that a wound had been produced by a firearm, to tell what kind of projectile had been used and the range from which it had been fired, and to judge the direction in which the bullet moved When a firearm was discharged within 1 in of the skin the cone of gas and powder which passed out of the barrel went into the tissues and split them The discharge of a firearm in the mouth, even with a blank cartridge, caused gross laceration of lips and cheeks and fractures of the jaw, and might well cause death If the weapon is discharged 3–4 in from the skin there was a complete circular zone of blackening and burning round the entry of the bullet, but at distances greater than this no powder blackening was to be seen It might even be difficult to decide which was the wound of entrance and which of exit The entrance wound was usually a clean hole which incidentally might be smaller than the bullet itself because of the resilience of the tissues Around this was a zone from which the epithelium was removed and which appeared bruised The exit wound always showed tearing and splitting of the tissues, particularly of the skin. In the skull the entrance was clean-cut but where the bullet left the bone there was shelving A glancing blow by a bullet, he said might fracture the skull and drive portions of bone into the brain and these might cause injury or death as secondary missiles although no trace of the bullet itself might be found Revolvers and automatic pistols fired bullets at a medium velocity up to 1200 ft per sec and the track produced by these bullets while resulting in considerable damage had no great disruptive character The modern rifle however, fired a bullet at 3000 ft per sec · the bullet spun at about 3600 revolutions per sec and had in the early stage of its trajectory a wobble which could cause great injury Rifle bullets produced clean-cut entrance wounds with a surrounding zone of epithelial removal The exit wound was much larger and grossly torn and there was much destruction and disruption of tissue along the track It was this great internal disruption that in every war led to accusations of the use of explosive and dum-dum bullets—accusations which were usually entirely unfounded Using clay as a medium he had carried out experiments on the track and action of the bullets When a rifle was fired at a short range (between 3 and 300 yards) the bullet enters the clay for about 3-4 in. and then explodes producing a cavity about 1½ in in diameter The bullet itself may completely disintegrate This disruption Professor Smith said was not due either to the blast of air or to a sucking action, as could be proved by firing through a rubber sheet or through a soap bubble , it was due to the violent spin of the bullet If the size of the cartridge charge was reduced by half, both velocity and spin were also reduced and the bullet produced no disruptive effect Dum-dum bullets cause smashing at the entrance and not within the structure pierced

THE TENNENT CHAIR

Dr W J B Riddell has been appointed to the Tennent chair of ophthalmology in Glasgow University as from *Oct 1 1941* in succession to *Prof A J Ballantyne* who retires under the age-limit The new professor is 42 years of age and son of Brownlow Riddell who was surgeon to the Glasgow Eye Infirmary He was educated in Glasgow graduated in 1923 and studied in the eye wards at Glasgow and Moorfields, taking the D O M S in 1936 For some time he has been surgeon to the ophthalmic institute of Glasgow Royal Infirmary and in his new post he will have charge of the ophthalmic department of the Western Infirmary

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Infectious Disease in England and Wales

WEEK ENDED JUNE 14

Notifications —The following cases of infectious disease were notified during the week · smallpox 0 scarlet fever, 973 whooping-cough, 4764 , diphtheria 853 , enteric fever 146 ; measles (excluding rubella) 11 145 , pneumonia (primary or influenzal), 804 , puerperal pyrexia 110 , cerebrospinal fever. 236 , poliomyelitis, 5 , polio-encephalitis 1 · encephalitis lethargica 3 , dysentery 97 No case of cholera, plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospitals of the London County Council on June 11 was 1670 including scarlet fever 190 diphtheria 325 measles 319 whooping-cough, 42[illegible] enteritis 20 chicken pox 86 erysipelas 46 mumps 10 poliomyelitis 1 , dysentery 9 cerebrospinal fever 44 , puerperal sepsis 12 enteric fevers 20 german measles 17 glandular fever, 3 other diseases (non infectious) 58 not yet diagnosed 80

Deaths —In 126 great towns there was no death from enteric fever, 1 (0) from scarlet fever 19 (2) from whooping-cough, 9 (2) from measles 26 (1) from diphtheria 28 (1) from *diarrhœa* and enteritis under 2 years, and 19 (2) from influenza The figures in parentheses are those for London itself

Liverpool reported 4 deaths from diphtheria Birmingham 3 Liverpool had also 3 deaths from whooping cough

The number of stillbirths notified during the week was 194 (corresponding to a rate of 36 per thousand total births) including 10 in London

In England Now

A Running Commentary by Peripatetic Correspondents

SOME people may be able to obtain philosophic pabulum from the works of Kant or Hegel For myself I find the philosophy of Alice in Wonderland singularly sustaining at the present time since it inculcates the doctrine that wherever one finds oneself there is no need to be astonished or surprised After having been thrown with considerable rapidity from one end of the earth to the other in fast-moving planes after having descended thousands of feet into the bowels of the earth to see how gold is dug out of the Rand, after having ridden for miles on the backs of fierce-looking though actually very tame bulls or plodded on my flat feet up the sides of tropical mountains, it seemed quite natural to be dressed in an old duffel coat doing anti-submarine watch on the bridge of a liner somewhere in the Atlantic For the only contribution to his own and the general safety that the mere passenger condemned to travel in convoy has to make is to take a turn at submarine spotting This is a very necessary job for the modern submarine can usually see a ship long before the ship sees the submarine, while when travelling submerged it is only necessary for the submarine to raise her periscope above water occasionally and then only for six inches and for a few seconds at a time Nevertheless if the periscope is raised more than once there will be a tell-tale line of white foam which with luck may be seen Unfortunately for the uninitiated the wake from a submarine s periscope is only too easily imitated by a number of artefacts · a piece of flotsam bobbing about in a choppy sea a school of porpoises, a whale a shoal of flying fish and even the froth raised by a ship s log line when seen from half a mile away, all gave rise to unnecessary alarums and excursions Sometimes, instead of taking a shot at a single ship from a distance of half a mile, a submarine like some old-fashioned medical practitioner, will employ a blunderbuss prescription and discharge from a range of as much as four thousand yards a bevy of torpedoes into the middle of a convoy on the hit or miss principle On rare occasions a submarine has been known by mistake to surface in the middle of a convoy, and then its chances of survival are not too good for it may well be rammed by some enthusiastic merchantman before it has time to crash dive Actually travelling in convoy in war-time is far more interesting than a peace-time voyage where the sight of a single ship constitutes an event of major importance Now apart altogether from watch-keeping it is always possible to study the manœuvres of some flurried merchantman as he does his best to keep station or to carry out the technical exercises devised by the commodore of the convoy to train the ships of his fleet to withstand air or surface attacks Only too often some ship does not answer its helm quickly enough when told to alter course on our first night out we only avoided collision with our next door neighbour by a smart piece of seamanship on the part of the officer of the watch

One's fellow passengers are much of a muchness with those of peace-time The inevitable bridge fiends are there to begin the business of the day immediately after breakfast so too are the hard drinkers who prefer a whisky and soda to the most lavish breakfast rations The inevitable bore has not been left behind and is still there to retail as he fixes you with a cod-fish eye, exactly what he did in the last war and what. if only the Governor had let him go, he would have done in Norway, France, Libya Greece or Crete in command (for he could have had no lesser post) of what the Navy now calls the B E F (Back Every Fortnight) Only one of the types to be found on every ship has slightly altered the hearty, who in peace-time organised ' compulsory " games or fancy-dress dances, now organises watches or has become an authority on Lewis guns

While we were still in harbour where for ten days we enjoyed the amenities of that port which not so long ago was named " the devil s poste restante, ' there was much talk of how this ship had been torpedoed or that one bombed Once we were under way however more interest was taken in seeing that if and when one took to the boats, there was a good supply of chocolate, barley sugar and cross-words As we steamed northwards day slowly succeeded day until there seemed no particular reason why we should ever reach our destination When this stage is reached, as it inevitably is in every long voyage, there is a general fed-upness with the food, the ship and one's fellow passengers Everyone knows everyone else's life history and the exact reasons why the last tour was so much much more trying, as it always is, than the previous one everyone can answer a written examination paper on the merits, or more precisely demerits, of being stationed at Minnar or Maiduguri It was a particularly depressing morning, the sky was a uniform grey, with just here and there a dash of yellow ochre as a reminder that somewhere, but certainly not here, there may have been a rosy-fingered dawn The sea though flecked with white looked like lead—it shows how little the Greeks can have known of the Atlantic, if they could use wine-dark as a stock epithet for the sea, the Arabs were better informed when they called the Atlantic "the dark sea of greenness"

On the particular morning of which I write the general depression was heightened by a choppy sea and a half gale from the north-west so that the ship groaned as it pitched and rolled The wireless news was not too good—things in Crete were going badly, the *Hood* had been sunk and the whereabouts of the *Bismarck* were unknown Worse still, the supply of marmalade on the ship was exhausted and only enough cigarettes were left for another two days Then suddenly something happened Our escorting cruiser shot out from among her flock and with mounting bow-wave and ever-increasing speed vanished to the northwards At once the ship was as full of rumour as the canteen of a sergeants' mess · the cruiser, it was said, had sighted a submarine, had been recalled to Plymouth, the *Scharnhorst* or the *Gneisenau* had got out of Brest, the *Bismarck* was heading south During the day there was no news to lighten our gloom, which gradually became more inspissated All day the gale increased and the air was filled with scud so that the sea and sky seemed one To people returning from the tropics it was bitterly cold and at night even the poker school could not attract its usual clientele Next morning was just as bad About eleven I was walking round the deck in a vain effort to get warm when I was nearly knocked over by someone rushing down from the bridge with the news that the *Bismarck* had been sunk by our cruiser "H M S *Dorsetshire*" At once the gloom lifted and faces that had been long as a boot suddenly brightened The sun too came out and once more it was warm and bright Twenty-four hours later the track of our convoy led us across the spot where the *Bismarck* had gone down An empty raft, a baulk or two of timber and what looked like a piece of matting was all that remained afloat of the ship that German propaganda had said was unsinkable

The next few days were uneventful Escorts dashed around us rather like terriers smelling out a rat Now and again someone would drop a depth charge and two or three of the escorts would gather in a bunch to listen Soon we were steaming slowly into the haven where we would be Thanks to the Navy it is still possible to go about one's lawful occasions

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Like the atheist whose indignation was roused by revision of the Prayer-book—"tampering with the rules of the game"—or the man who had never been to the National Gallery but wrote to protest when a Velasquez was cleaned of the varnish which for him made it an old master, most of us feel that there are certain inheritances, the patina of England, whose destruction we bitterly regret, though they made no contact with our working lives The old glass in country churches (how little of it is ARPed), Wren's buildings (what is to be done with their exoskeletons ?), the pompous rituals of civic and university life which astonished Cajal the Spanish neurologist when he came to England fifty years ago—all these things we unconsciously value even if we only recall them with affection when they are threatened But libraries, those museums of old, useless and boring books, does anyone bother even as much as this about libraries except librarians ? When we read in the accounts of air-raid damage that "30,000 books were burnt" in such and such a library, that Coventry has lost all its engineering journals, the state library in Berlin has had its roof burnt off, the libraries of Liverpool and Plymouth have been wholly destroyed, do we really mind ? A warlike generation, living for the present, often thinks that the best thing to do with shelves and shelves of books is to burn the lot "Do you ever read medical books ?" I asked M who has been a regimental M O. since the beginning of the war He had just been complaining how little he has to do and wishing he was either "at the war" or settled with his wife and children in a comfortable practice "No, I don't read them now," he said at once "Not the *Lancet* and *B M J* ?" I persisted "In peace-time, yes," he answered, "but not now" A more usual excuse is "too busy to read," though the greatest readers are often the busiest men Osler and Cushing were certainly busy and yet you could safely bet on their having been the best-read doctors of their time But the bibliophile and the "well read man" are creatures of an age of peace Who will collect books if his library may be blown up any night ? Or read them if he has to spend his evenings in the cellar or the first-aid post ? But our semi-public medical libraries are collections already in being, feeding with books that minority of the profession which still has appetite for them What is to be their policy ? Ought they to move their collections out of the front-line of the big towns to some country place where they will be temporarily more or less useless, on the principle of "living to fight another day" ? Or ought they to believe the serpent who whispers "you shall not surely die," and go on with their civilised and peaceful business as efficiently and completely as possible ?

Everyone, even the layman with no elements of physiology, accepts the circulation of the blood, as the proverbial patient insists, "I've got blood-pressure, doctor" But how few medical men trouble to read the arguments which Harvey used in convincing his unwilling contemporaries Or take the blessed word "evolution" which is a commonplace in the background of everyone's thought Even among professional biologists how many have the information to weigh Darwin's hypothesis, not against the prejudices of a Wilberforce, but against the theories of a Lamarck or of modern diffusionists ? Sir Charles Sherrington in his fascinating book "Man on his Nature" makes clear the value, even in war time, of examining the foundations of our beliefs What were the arguments from which we accept these generalisations—circulation, evolution, nervous integration—which seem the very framework of the scientific outlook which has to be defended against the mysticism and mythology of the Nazis ? Their ability to answer these questions is the real justification of the historical collections in our libraries The Nazis are thoroughly consistent in their burning of books They realise that books preserve that continuity in development which differentiates civilised people from the savage who inherits unchanging traditions and from the uneducated proletariat who swallows whatever new political religion is put over them with the slickest advertisement These landmarks of intellectual and scientific discovery, these really "holy books," a library ought to preserve with the utmost care from the dangers of war But what ninety-nine readers out of a hundred want from a scientific library is not these philosophical monuments and still less their undergrowth of minor books of the past, but current information in the form of textbooks and monographs by the master workers of today and, still more, the latest periodicals with contributions from their fellow specialists On first thought such books can be safely risked, they are new and easily replaceable—or are they, when publishers' warehouses are being bombed no less than libraries, and not one copy but a whole edition of 1500 copies may disappear in a night ? Almost all last November's issues of American journals were lost in the Atlantic, and we are quite cut off from German scientific work And it is surely desirable, even from the most warlike motives, to follow the course of German medicine and German health Can we not devise a central pool for current medical information, supplied from America by micro post, like the thousands of letters now being flown in a single packet from the armies of the Middle East ? Then our libraries could draw on this pool as their need arises The problems both of supply and protection would be simplified

Letters to the Editor

THE PHILOSOPHICAL APPROACH

SIR,—Dr Russell Brain's essay on Brain and Mind, at the front of your issue of June 14 is most welcome and valuable Welcome because just now I feel that there is a tendency among younger psychiatrists to swing away from the purely psychological approach to the study and treatment of the neuroses and to hope that shock therapies and prolonged narcosis are all that is needed to help a patient back to a normal adjustment to life and to their own unconscious I should like to think that this essay would be read at the inaugural lecture of any course in psychological medicine It gives, to my mind at any rate, an unassailable charter for our special branch of medicine I think too it may strengthen the weak knees of some, who, having become bogged in the apparent morass of the various schools of analytical psychology, or perhaps not having come to terms with their own unconscious, are tending to seek the firmer ground of more mechanistic conceptions

Cardiff. MAURICE B WRIGHT.

MEDICAL PLANNING RESEARCH

SIR,—It was a striking letter that you published in THE LANCET of June 21 over 47 signatures If a genuine, detailed scheme of research can be carried out by strictly scientific methods into the 300-odd aspects of the medical services in this country it should lead to results of the utmost value The very fact that it is undertaken in so self-consciously scientific a spirit should arouse a widespread appeal, and perhaps lead to a brushing-up of scientific principles in some of the signatories

The weaknesses of the project as I see them are, first, that the organisers are apparently not concerned with making themselves representative of the profession as a whole. Secondly, I asked myself did my eyes deceive me, or did I read aright? What is all this Herculean labour to eventuate in? A book! The varied and detailed investigations, it is hoped, will be embodied in a book, and "when this stage is reached," the signatories declare, "our task will be ended" Sir, the mountain after its historic labour did produce a mouse—something living organic and capable of increase But I can visualise the volume that we are here (almost) promised—efficient, accurate and probably sterile in results I can even imagine one of your peripatetic correspondents saying what a good book it was, and, in reminiscent vein, drawing thin philosophical and erroneous biological conclusions from it. Furthermore, if it conflicts to any serious extent with the findings of the B M A planning commission is it not merely likely to be ignored? For, as the B.M.A commission claims to be representative of the profession as a whole, will it not consider itself justified in disregarding the research results of a committee which, on its own admission makes no such distinctive claim?

With youth at the helm, cannot the under 45s do better than this? Cannot they make themselves at least representative of this age-group in the profession and prepare to draw up a programme of action based on their research? I intend to send my half-guinea in support of the proposal. This is not to show any faith in the movement as it is described, but in the hope that any subversive influence I can exercise will stir those responsible to plan for deeds and not merely for words

Harley Street, W 1 FREDERICK DILLON

SIR,—Many younger members of the medical profession will doubtless be glad to give what evidence they possess to try to improve the services rendered by the profession to the public But I question whether this is the proper time to collect "all available evidence" to achieve this end Surely more evidence will be available when the great number of younger doctors now with the Services can have the matters now under discussion brought to their notice, and when those left in civil life have more time and opportunity than at present to contribute their views? The coming three months, in which all these important matters are to receive full consideration, are likely to be critical months They may be hard and distracting months for many members of a profession confessedly so short-handed that it is receiving help from America and from exile doctors Apart from these facts does not the problem now present more unknowns to would-be solvers than in any time past or to come? Why, then have the promoters of this scheme of medical planning research waited till now to feel so strongly the need for reform that they must call in your columns for help? It is true, of course that after a period of upheaval there may be unusual opportunities for reconstruction, but cannot our profession take Mr Churchill's advice and deal with our problems in the order in which they present themselves?

UNDER FORTY

THE NATIONAL LOAF

SIR,—Your leading article of May 31 is useful in drawing attention to the anomalous attitude taken by the Government in the provision of a war bread The most recent pronouncements would indicate that the fortified loaf is, or will be, available within the next few days in certain restricted districts of the country The delay in providing it has been attributed to a mechanical breakdown in the manufacture of vitamin B_1 and a further statement has been made that supplies are being obtained from the United States, but a very important aspect of the fortified loaf remains obscure, notwithstanding repeated questions in Parliament on the subject—namely, which salt of calcium, and in what dosage, is to be added to the government loaf The second memorandum from the Medical Research Council, quoted in the same issue (p 703), apparently recommends calcium carbonate There is no indication that the Government has accepted, or is about to accept, this recommendation No reasons are adduced in the memo for making this choice except its "convenience," to which one may perhaps add, its cheapness

In view of this choice it may be pertinent to point out that at a symposium of biochemists held in 1940 to discuss fortified white bread there was a general consensus of opinion that "adulteration" (as this addition was widely described) of bread with lime salts is a bad precedent and the choice of the carbonate was specifically deprecated, even by speakers who gave a qualified approval to the addition of synthetic vitamin B_1 This point of view is repeated with obvious knowledge and authority in the admirable article by Drs Kent-Jones and Amos in the *Lancet* of June 7. There has been, as your columns testify, more recently a protest from clinical researchers, who have pointed out the positive dangers arising from the addition of any calcium The advice upon which the Ministry of Food has acted, or is about to act, with regard to the calcium addition remains anonymous, and therefore lacks authority To take such an important step, without the most careful clinical observation to reinforce or correct the opinions apparently founded upon laboratory experimentation, seems in conflict with the well-established English practice of giving proper weight to clinical evidence The lack of candour, not to say the positive evasiveness apparent in the answers given in Parliament by the Minister of Food, is far from reassuring, and it is perhaps not too much to say that the government fortified loaf in these circumstances is already very largely discredited

The present position therefore is that, until the fortified loaf of doubtful acceptance becomes actually and generally available (and its provision was promised just a year ago), the flour now predominantly supplied remains of an extraction of 70% to 75%, the latter ratio having been introduced last April That this flour is of very inferior nutritive value is generally agreed, and surely it is a serious responsibility of the food ministry that the nation has been left for all these months in a precarious position as regards this most important foodstuff The arguments in the last paragraph of your leader, for a universal adoption of the 85% extraction flour, seem unanswerable Its adoption would represent a compromise, dear to the British temperament, between the 90–95% extraction adopted during the latter years of the last war (when the need for saving shipping space was inescapable) and the 75%, which the Parliamentary Secretary in an answer to me declared represented the "limit" of concession the Ministry was prepared to make in the matter of extraction for the fortified loaf

House of Commons E GRAHAM-LITTLE

THE CRUSH SYNDROME

SIR —I have read with great interest the article in your last issue (p 780) by Mr Patey and Dr Robertson on compression treatment of crush injuries of limbs Arguing that the crush syndrome was due to a loss of substances from the circulation into the damaged limb, they treated their cases with intermittent positive pressure to the œdematous limb by means of a modified Pavaex apparatus I have not had the opportunity of seeing one of these cases myself, but, if I might be so rash as to make a suggestion, might not continuous compression with Elastoplast or plaster-of-paris be equally effective and far easier? I notice that of 20 cases reported by themselves or quoted in the literature 16 had no evidence of fracture, while 4 had fractures (1) Linear fracture of right pelvis, (2) fractured pubis with no displacement, (3) fractured forearm, (4) fractured tibia No mention is made of the treatment of these fractures, but I imagine that plaster-of-paris was not used

Many of Dr Trueta's serious fracture cases at Barcelona had just as much œdema, but none developed renal failure It seems to come to this that if you are pinned down by a beam and sustain a fracture, when you reach hospital you are put up in plaster-of-paris and you *escape this curious renal syndrome*, *while, if you* are pinned down and get only a soft-tissue injury, you are not put up in plaster and you are liable to develop renal failure Might not the principle of elastic compression of a limb be applied successfully to these crush injuries?

Selsey JOHN GIBBENS

POSTWAR HOSPITAL SERVICES

SIR,—After the letter from a medical superintendent (*Lancet*, May 31, p 707) perhaps the views of a recently retired deputy medical superintendent on the vexed question of medical versus lay control may interest your readers In my early days in a municipal hospital service there seemed to me to be only one solution—medical control Now, after considerable experience, I find myself with an open mind It would be ungracious to deny that, in my earlier years, I had the good fortune to work under some very able superintendents and I trust that I profited by the experience But the very type of M S described in the article by Drs Hunter, Perry and Vaizey (*Lancet*, May 17, p 639)—the "wary political fencer"—unfortunately does exist, and the trouble is that such a man, because he too is a doctor, can be immeasurably more obstructive to clinical work than a layman For example, it has been my lot to work in a municipal hospital treating general diseases (within a hundred miles of Piccadilly Circus) which for years did not possess a lumbar puncture needle and in which my efforts to order one annoyed the M S "more than somewhat," as Damon Runyon would say Now I will, with some confidence, undertake to persuade an educated layman that every patient with a chronic cough should have his sputum examined and that every middle-aged patient with a positive Wassermann should have an examination of his cerebrospinal fluid, but—as a direct result of experience—I despair of converting a certain type of doctor to these views *if* he is my superior officer No general conclusion can, of course, be drawn from my experience, but I wish to urge that very real snags can exist in the present system in municipal hospitals

J C

SIR,—"Observer" condemns medical superintendents with such vehemence, and has such definite ideas as to the perfect hospital system, that one can imagine that had he been a superintendent himself he might have provided an example of his criticism All medical superintendents have been trained in voluntary hospitals, and most have spent some years in them following graduation, and have a great respect for them There may be medical superintendents who do not adjust themselves to consultants' views, but difficulties can be solved by a proper approach from both sides Similarly medical superintendents sometimes have cause to criticise the actions of certain members of consulting staffs for, though most of these are very conscientious, a few regard a public hospital appointment as a minor additional source of income, and fail to keep to their times of appointments and of operations if they conflict with a non-urgent private case Some consultants see the municipal hospital as a possible menace to their livelihood, and are resentful that many interesting cases go there rather than into a voluntary hospital They seem to wonder whether the patient will be properly looked after, though anyone who has had wide inside experience of both types of hospital knows that the general care and attention may be of a higher standard in the municipal hospital Indeed, a large number of patients ask to be sent to municipal hospitals rather than voluntary ones Amalgamation of hospital services will undoubtedly be desirable after the war, how successful or otherwise it may be will depend on the individuals concerned Many medical superintendents are just as resentful of officialdom and red tape as is "Observer," and believe that a unified hospital system should be able to function independently of direct local or general government control It is interesting to note that even "Observer" thinks that medical administration is essential his suggestion that a medical superintendent should have definite beds of his own, the others being allotted to consultants, should work satisfactorily if the consultants could always be depended on to adhere strictly to their duties Unfortunately in many areas it would be impracticable, as a municipal hospital appointment appears to take third place to voluntary hospital work and private cases, and the consultant's work sometimes has to be done by the permanent hospital staff If all consultants would carry out their municipal hospital duties as assiduously as they do their voluntary hospital work, "Observer's" suggestion—of a medical board to deal with the clinical side, with the medical superintendent as chairman and decisions taken by general agreement—would be a good one He cannot have a large knowledge of municipal affairs if he considers that the medical superintendent obstructs expenditure on equipment, it is just the reverse, he is continually pressing for advisable expenditure which is turned down because the hospital is merely part of a large and varied organisation, the total expenditure on which is controlled by fear of raising the rates The relationship between the two types of hospital depends on the personality of the staffs, and in many areas there are mutual appreciation and happy relationships—to the benefit of the sick, and that is the primary object of all hospitals

M S

SIR,—"Observer's" letter of June 14 on his trials in an E M S hospital gives a picture of service under these conditions which is completely opposite to my experience in a similar hospital This too is in the country under the control of the councils of three counties It was a mental hospital quite unequipped for general work, and the original superintendent still functions as such under the new conditions The medical staff includes the senior physician of a teaching hospital, a physician from another such hospital, and a recently retired physician from a very famous institution, all of whom work full time On the surgical side are, beside myself, another full-time senior surgeon from a very important London hospital, two part-time surgeons from a great teaching hospital and another surgeon, trained in a professorial unit and now on the staff of a hospital near London There is also an important orthopædic unit The residents all come from one teaching hospital All the members of the staff have their wards and working conditions as though they were in London There is no interference in any way with their clinical activities, least of all by the medical superintendent Special classes of case naturally drift to those members of the staff interested in a particular subject, though there is no rigid rule about this Thus genitourinary patients gravitate to the surgeon specially skilled in this work, and peripheral nerve injuries go to the same surgeon as he has had particular experience in such cases Neurological patients go to the physician interested in them These things happen quite naturally without irksome rules or regulations, usually by reference from colleagues The medical superintendent is content to leave the clinical work in the hands of the clinical staff, and being a man of sympathy and perception is always willing to listen to their demands and accept their advice Never have I known anything refused when a reasonable case for it has been made out though war conditions and policy must of necessity exert an influence It is really extraordinary how equipment has been provided by the Ministry of Health in so short a time An ordinary hospital gathers its equipment little by little over a period of years and it accumulates unnoticeably When starting from nothing the demands of a general hospital are staggering in amount and cost Yet this equipping has been done, and the result is a hospital able to grapple with almost any branch of work Admittedly it is not perfect, but all the essential things, all those things absolutely necessary for first-class work are there There is an atmosphere of comradeship and mutual help throughout the senior staff, the residents and nursing staff which makes for smooth working and efficiency I cannot believe that our problems have been very different from those of other hospitals and I do not think such a complete organisation could have been got together in so short a time and under such difficult conditions unless it had had the drive and prestige of a Government department behind it

If Observer would visit this E M S hospital I think he might revise his views of hospitals run by the state

CHARLES PANNETT

MEDICAL BENEVOLENCE

SIR,—A loss in income of £1292 sufficiently explains the reason for this letter This loss to the Royal Medical Benevolent Fund is largely due to the fact that many of our regular subscribers practising in towns heavily bombed have suffered serious financial loss, and have had to reduce or cancel their subscriptions Their number may well increase before the war is over Everybody knows the beneficent work of the fund in helping members of our profession and their wives widows and children who are living in straitened circumstances, and who in many cases, are quite unable, through age and infirmities, to do anything to help themselves The committee has done everything possible to cut down overhead charges Administration is carried out with a reduced staff in less costly offices Expensive annual reports have been abolished and one way and another we have managed to effect a very considerable saving in our annual expenditure Unfortunately, however, this is not nearly enough, and if the work is not to be seriously crippled we must get more help We need donations to meet the present emergency, and especially we need many more annual subscriptions Poverty is hard to bear under any circumstances, but when accustomed help is curtailed and prices are soaring—as is the case today—the position may well become desperate Here is a passage from a letter which reached me the other day

"I am sending you a donation as a thank offering for the fact that circumstances have placed my life in a spot where there is less danger from enemy action than is the case with my brother practitioners"

I appeal to all of your readers who feel that they are in similar fortunate circumstances to come forward at this critical time to help in carrying out our duty to our distressed colleagues Contributions should be sent to the Royal Medical Benevolent Fund, 1, Balliol House, Manor Fields, Putney, London S W 15, and will be gratefully acknowledged

ARNOLD LAWSON,
Chairman of the Committee of Management

PUNCH WITH CARE

SIR,—The view expressed in your annotation of June 14 that punchdrunkenness is a condition mainly found in second-rate professional fighters of long standing is well supported by observation of a considerable number of boxers seen by Dr E Guttmann and myself during the past few years We are, however, aware that our outlook may have become too pessimistic as the majority of these boxers were severely affected and only came because they were either worried about their health or had been urged to come by anxious relatives or managers In order to obtain a well-balanced outlook on the problem of punchdrunkenness a controlled investigation should be carried out A group of say 50 professional and 50 amateur boxers should be selected from recruits to the Services and members of these groups should undergo special individual examination Such a comprehensive investigation of a representative cross-section of professional and amateur boxers selected in this way would have several advantages

1 The policy which should be followed by the various Services as regards boxing could be indicated

2 Attention would be drawn to any recruits who have even the slightest damage to the central nervous system

3 The very earliest symptoms of what is later termed punchdrunkenness could be assessed

4 Definite instructions could be given to all doctors who have the responsibility of examining at regular intervals professional and amateur boxers both in the Forces and in civilian life

London W 1 C E WINTERSTEIN LAMBERT

THE SHORTAGE OF DOCTORS

SIR,—The shortage of medical personnel has been sadly overemphasised both by political statement and the press That there is a shortage cannot be denied but it is only in two classes of the profession It is unfortunate that these two classes are so important, for their importance has in part caused the overemphasis The other cause has been the unwillingness of hospitals and the authorities in charge of them to let men whom they have trained to be competent surgeons and physicians go into the Services as regimental medical officers and corresponding ranks, to look after 500 fit men and the requisite number of latrines It is this feeling of uncertainty about the proper utilisation of medical man power which is worrying the hospitals and the profession generally, and hence the unwillingness, which has created a spurious atmosphere of shortage It should be made quite clear that there is no shortage of medical or surgical specialists in the country or in the Services, and that the training of many more is still going on

The first class in which there is a true shortage is in the most important branch of the profession—general practitioners This has resulted, first from the overriding demands of the Services, and secondly, from the method by which the recruitment of G P s was done The Central Medical War Committee, acting on behalf of the Government, delegated the duty of recommending who should be taken and who left to their local medical war committees No other method of recruiting G P s was at hand and to institute another would have cost both time and money It is a pity that local selections should have contributed to this shortage though naturally the final decision was not taken locally but by the Committee of Reference of the C M W C , to whom all practitioners have a right of appeal The system of local recommendation has resulted in the more active practitioners in many spheres of medical interest being recommended and finally taken into the Services So the elderly and the relatively inactive have been left It must be remembered that many active practitioners were territorials and many more volunteered, and there was no court of appeal to whom their patients could apply for their retention All this seems inevitable but is scarcely fair to the public The cure for this shortage is obvious but costly The E M S already has a comprehensive regional hospital scheme in operation If inpatient treatment for cases referred to these hospitals by G P s was started it would greatly relieve the burden of the over-worked G P If outpatient treatment was also allowed at these hospitals it would serve the double purpose of solving the G P 's problem and giving the hospitals more to do between blitzes

The second class in which there is a true shortage is the house-officer, who as the youngest member of the profession is naturally taken by the Services This shortage too could be alleviated if all the newly qualified men were compelled to work in hospital pending their recruitment Too much blame should not be attached to those of them who prefer to do locums in general practice for in the six months before they are called up they can earn £200–£250 (all found) in this way whereas as a house-officer they would only get £60 (all found)

Much has been written and said lately about the employment of alien doctors to replace our deficiencies, and more and more are being so employed, but, as Professor Greenwood pointed out in his letter of May 31, there are difficulties in their employment In the main they are not suitable for general practice, even if they have British medical degrees (picture a fashionable German Jewish gynæcologist attempting to doctor a Norfolk agriculturist), and indeed many of these aliens are specialists of whom there is no shortage Reasons of national security also make them unsuitable for employment as G P s When considering their employment as house-officers, it is well to bear in mind that the house-officer, admittedly under supervision, does a major share of the work of the hospital Even under peacetime conditions he is expected at most hospitals to give a large number of anæsthetics, and anæsthetics as we know them, except in Scandinavia, do not form part of the medical curriculum on the Continent It is quite understandable that hospitals are not always willing to employ middle-aged or elderly aliens as house-officers, and the aliens themselves are not always willing to accept this, the most ill-paid and menial task in the profession

I am glad to see that a representative committee to inquire into the proper utilisation of all medical man power, both in the Services and outside them, has been set up This should go a long way towards allaying the disquiet in the hospitals and the profession generally

A B C

THORACOPLASTY

Sir,—In his letter of June 14 Dr Gregory Kayne writes with a little dissatisfaction about my article and your leader in the *Lancet* of May 31 It is with some hesitation that I ask you to give me space to make one or two points in reply I do know Overholt's figures and consider them very striking, but Dr Kayne must still allow us to hesitate over operating on the type of older patient that we get at Colindale Hospital Exudative and proliferative disease may be clinical rather than strict pathological terms (this is open to dispute) but it would be a mistake to fail in their separate consideration when the question of treatment arises Alexander, in his classic on collapse therapy says (p 427) "the predominance of productive or fibrotic lesions, in contradistinction to exudative lesions, indicates a favourable resistance to tuberculosis", and later "serial roentgenograms should show that the exudative elements are regressive or at least stationary," if a thoracoplasty is to be done There is an excellent definition of the exudative type of disease in "A Textbook of X-ray Diagnosis, by British Authors" (p 303) As regards blood examinations, I certainly would not lay too much stress on them, but, as I said, they "play a part in our assessment of resistance and toxicity" Other clinical features help in this, of course, and perhaps bronchospirometry will come into fashion as a helpful (though not essential) means of estimating respiratory function

London, N W 9 J V Hurford

Socialist Medical Association —At the annual general meeting of this association, held on May 25, the following resolution was put on record

> That in view of the recent appeal for a thousand doctors from the United States and the decision to employ 4th and 5th year medical students as house officers, this meeting protests against the Government's failure to make use of the medical services of the anti-Fascist refugee doctors in this country Since only about one hundred of the 1400 now in England are being allowed to use their medical skill and training, we demand that there should be an immediate speed up of the machinery to effect the registration and employment of eligible alien doctors, and that those now employed on demolition and construction work in the Pioneer Corps be released for work in which their medical experience can be used

British Postgraduate Medical School —A course on War Surgery of the Chest will be held from July 7–11, at which the following will lecture Mr Tudor Edwards, Mr T Holmes Sellors, Mr O S Tubbs, Mr Price Thomas, Dr H Woodfield Davies, Prof J A Nixon, Mr A K Henry, Prof G Grey Turner, Dr J Duncan White, Surg Rear Admiral G Gordon Taylor, Mr R C Brock, Mr N Barrett, Mr J E H Roberts and Dr A J Morland Officers of the armed forces wishing to attend without payment should apply through their Director Generals For others the fee is a guinea, and tickets may be obtained from the Dean, British Postgraduate Medical School, Ducane Road, W 12

Further courses will begin on the following dates War Surgery of the Nervous System, July 21, Operative Surgery in War time, Aug 22, War Surgery of the Extremities, Sept 1

Parliament

Economy of Medical Personnel

Mr E Brown, Minister of Health, in the House Commons on June 24, announced his decision, in agr ment with the Service ministers and the secretary state for Scotland, to set up a committee to investig what further steps can usefully be taken to secure utmost economy in the employment of medical personn in the Forces, the emergency hospital scheme and th civil defence services, and all other medical service, including general practice The names of its membe are as follows

Mr Geoffrey Shakespeare, parliamentary under secret for the dominions (chairman)
Prof R M F Picken, M B, D P H, Welsh N School of Medicine
Sir Alfred Webb Johnson, vice president R C S
Dr J Crighton Bramwell, F R C P
Prof Sydney Smith, M D, Edinburgh University
Dr J A Brown
Dr William Malcolm Knox
with medical representatives of the Admiralty, W Office and the Air Ministry

In addition the following have agreed to be associated with the work of the committee —

Sir Charles Wilson, P R C P
Sir Hugh Lett, P R C S
Mr H S Souttar, F R C S, chairman of the Centr Medical War Committee

QUESTION TIME

Clothing Coupons

Questions addressed to the President of the Board of Trad elicited the following information

Temporary inmates of hospitals and institutions are alread in a position to purchase the normal ration, since they posse a food ration book The normal supply of clothing coupo will be issued to permanent inmates as soon as this can arranged In the meantime, hospitals of all kinds may, as provisional arrangement, obtain their essential requiremen by giving a formal receipt to the supplier This latter pr vision enables hospitals to obtain supplies both for patien and for nurses Similar facilities are available to institutio under local authorities

Special temporary arrangements have been made f nurses of the British Red Cross Society, the St John's Amb lance Brigade and members of the Joint War Organisati to obtain their uniforms without surrendering coupons F other hospital nurses, arrangements are under discussion wi the British Hospitals Association and, in the meantime, t hospitals may obtain supplies of rationed goods witho coupons by giving traders a receipt specifying the goods a stating that these have been supplied for their use

The Wholemeal Loaf

Commander Locker-Lampson asked the Parliamenta Secretary to the Ministry of Food if he had made an estima of the amount of shipping which could be saved if a wholeme loaf of 95% content were adopted, what saving in meat an other food products would ensue, and how many tons offals would be available for pigs and poultry if all wheat we milled here —Major Lloyd George replied The Minist has estimated the amount of shipping space which could saved on the transport of grain for bread for various rates extraction and has considered this in relation to other facto of importance which must be taken into account In repl to the second part of the question, as raising the rate *extraction would not be likely to increase the consumptio* of bread, it is unlikely that any saving in meat and other foo would ensue as a result of altering the rate of extraction flour In reply to the third part of the question, as the flou mills of this country are already milling wheat practically their full capacity, it is obvious that to raise the rate extraction to the figure mentioned would result in a su stantial reduction of the wheat by-products available for p and poultry

In reply to a further question Major Lloyd George added It is estimated that since July, 1940, the consumption wholemeal and wheatmeal flour has increased and now repr sents some 3% of the flour consumption of the country, excl of national wheatmeal flour, which has only been produced the beginning of this year and represents approximately of the flour consumption of the country The use of flour for purposes other than human food is prohibited, t under licence, by the Milled Wheaten Substances nction) Order, 1940 The food ministry has not licensed e of any undamaged flour for the feeding of dogs or for her purpose

Medical Equipment for the Home Guard

T E Groves asked the Secretary of State for War er he was aware that the medical equipment provided ome Guard battalions contained no cotton-wool, no nce out of which antiseptic lotions could be made, no ne, although this was officially approved for burns of e and hands, no morphia or other sedative, no adhesive or safety pins, and no splint long enough for the alisation of a fracture of the leg, and whether he would steps to see that the medical stores supplied were not less those provided for regimental aid posts —Captain R Margesson replied The Home Guard medical isation is framed to fit in with the existing system of ry and civil medical facilities In view of the wide rsion of sub units of the Home Guard it is seldom icable to adopt the system of an infantry battalion with mental aid post, and the normal practice is to establish it aid posts at which casualties will be collected for ation to the nearest first aid post or hospital, civil or ry, which will have all items of medical equipment sary for first aid Medical equipment has been provid for the sub unit aid posts on a scale that is considered cient to meet the requirements of their limited rôle

Evacuation of the Chronic Sick

Sir Ernest Graham-Little asked the Minister of Health many chronic sick and bedridden patients were still sed in public health and public-assistance institutions, in ntary hospitals and homes for incurables in London and r large cities which had suffered intensive bombing, and t effort had been made to remove such patients from gerous areas —Mr E Brown replied I could not give total without elaborate and detailed inquiry from a large ber of different authorities The desirability of removing many as possible of the chronic sick from the vulnerable is fully recognised but the difficulties are considerable, view of the urgent demands upon existing accommodation the acute sick, for casualties and service sick, for transd industrial workers and civil defence personnel, and for ers who have an at least equal claim to priority and the ssity of keeping a large number of beds immediately ilable for emergency purposes Every effort consistent h the other priority demands has been made to assist the oval of these cases, from the London area, for example, has been possible to remove some 8000 of the senile or onic sick so far—4000 from public assistance hospitals, d 4000 from those found in the public shelters and temporly accommodated in London institutions

Shortage of Male Nurses

Mr R. W Sorensen asked the Minister whether he was re of the increasingly serious situation in mental hospitals ugh the withdrawal of male nurses to the fighting forces, whether he was considering the possibility of an extension the Essential Works Order to cover the need of these itals —Miss F Horsbrugh, parliamentary secretary to ministry, replied Male nurses over 30 are not called up, those under 30 are called up only for service in their ession. Applications for deferment of individuals receive onsideration, recommendations for deferment are made he Ministry of Labour and National Service The ntial Works Order does not affect military service, but Minister has under consideration the question whether rder of similar effect should be made in respect of mental pitals

Deferred Medical Examinations

M. Robert Morrison asked the Minister of Labour her, where the chairman of a medical board deferred ination for a definite period for hospital treatment and e an entry to that effect in red ink on the grade card, the would be granted compensation for loss of income ng his period in hospital —Mr Ernest Bevin replied cal boards are not empowered to require a man to undergo al treatment or an operation, though they may in priate cases of temporary disability defer completion of examination and grading to a later date to be specified, together with the reason I do not think however that I ought to prohibit the boards from giving advice to a man subject to his consulting his own panel doctor or other medical adviser and I could not accept a special charge on public funds on account of the expense or loss of earnings due to his following such advice

Deaths from Encephalitis

In answer to a question Mr Ernest Brown stated that of the fifteen cases of postvaccinal encephalitis reported in 1940 five were fatal Two of the fatal cases were soldiers All that did not prove fatal have recovered

Medicine Stamp Duties

Mr Graham White asked the Minister of Health whether he was aware that the widespread advertising of patent medicines, often with an appeal to fear, led large numbers of people to treat their own ailments instead of using the medical services available under the National Health Insurance Acts, and whether as the repeal of the medicine duties would stimulate such advertising, he would reconsider the proposal for repeal —Mr Brown replied I have no specific evidence that any large number of insured persons treat their own ailments instead of consulting their insurance doctors and this was among the matters considered before the Chancellor of the Exchequer announced the decision to repeal the duties

Mr Horabin asked the Chancellor of the Exchequer whether he was aware that in proposing to repeal the medicine stamp duties his predecessor was influenced by the action threatened by Messrs Woolworth for illegal administration of the duties, and whether, as an alternative to repeal, he would consider the introduction of a bill to legalise any such administration —Sir Kingsley Wood replied The legal action referred to merely illustrates the difficulties to which the administration of these antiquated Acts continually gives rise The answer to the second part of the question is therefore in the negative

Mr Robert Morgan asked the Secretary to the Treasury whether he was yet in a position to state whether and, if so, to what extent the annual yield of the purchase tax on medicines, including proprietary medicines, exceeded £2,500,000 per annum —Captain Crookshank replied Precise figures of the yield of the purchase tax on prepared drugs and medicines are not available, but I think it possible that the yield for a full financial year will be of the order of £3 million

Sick Bay Service

Mr Rostron Duckworth asked the Minister of Health if it was his policy to encourage sick bay service, and in how many counties such services existed —Mr Brown replied The provision of sick bays, particularly for evacuated children, is encouraged as much as possible. Sick bays have been established in 53 out of the 62 counties in England and Wales

E M S Advisory Committees

Mr. T E Groves asked the Minister of Health how many medical committees, advisory or executive, were referred to by him in relation to the national emergency, how, when and by whom were they appointed, and what was their constitution —Mr Brown replied The following is the information desired

Central Medical War Committee and *Advisory Emergency Hospital Medical Service Committee*, the appointment aad constitution of which are set out in replies to members on Oct 26 and Dec 12, 1939, and Feb 20, 1941

Medical Advisory Committee on Rehabilitation, consisting of a number of specialists on this subject invited by the Minister in November, 1940, to advise the Director General, E M S from time to time on the rehabilitation of patients under the Emergency Hospital Scheme

Standing Advisory Committee on Physiotherapy, consisting of medical practitioners with special experience of this form of treatment, selected in July, 1940, by the Minister's consultant advisors in collaboration with official representatives of the specialists concerned, to advise the Director General, E.M S, on the facilities required for this form of treatment in hospitals under the E H S

Lord Horder's Committee on Conditions in Air-raid Shelters (with particular reference to health) appointed on Sept 14, 1940, jointly by the Minister of Health and the Minister of Home Security, and consisting of Lord Horder as chairman, a senior medical officer of the Ministry of Health, the chief engineer of the Ministry of Home Security, and two lay representatives of voluntary organisations concerned in welfare work

Rehabilitation

In reply to questions addressed to him by Mr Ellis Smith, Mr E Bevin, Minister of Labour, said The facilities for vocational training provided by my Ministry's existing training scheme are open to all men who are fit to undergo the training and it is hoped that substantial numbers of men and women who have been injured in the Armed Forces, in war service of any kind or in industry will after treatment prove capable of this training For those of them who require training but are not fit for the existing courses, special courses will be provided as the need for them reveals itself, either in the Ministry's own training centres or in other institutions or with employers Account will be taken of the evidence given by the joint committee of the Trade union Council and the British Medical Association In the first instance the scheme will be limited to training in occupations useful for the war effort

Obituary

JOHN FFRANGCON ROBERTS

B A CAMB , M R C S , SURGEON LIEUTENANT R N V R

Surgeon-Lieutenant Ffrangcon Roberts, who was previously reported missing, presumed killed, is now known to have lost his life when the ship on which he was serving, H M S *Rosaura*, was sunk by a mine in the Mediterranean on March 18 Elder son of Dr Ffrangcon Roberts, of Cambridge, he was educated at King's College School (Cambridge), Marlborough, and Trinity College, Cambridge After taking the natural sciences tripos he went on for his clinical work to the London Hospital, where he qualified in July, 1939 Before joining the R N V R in April of the following year, he was in turn house officer at the Albert Dock Hospital and resident anæsthetist at the London How he met his death is described thus by the captain of his ship The mine exploded and all the staff in the compartment affected had their legs broken One of the greasers had both legs broken, and although the room was rapidly filling with water Roberts went down and helped to bring him on deck Then in order to attend to other injured men there he had to go to his cabin to wash the oil off his hands The ship sank very quickly, and he went with her He was the best of shipmates, the captain adds, and the most popular member of the wardroom mess

F A Swaine

RICHARD EDMUND SYMES-THOMPSON

B A CAMB , M R C S

Dr R E Symes-Thompson, who died through enemy action last month while he was on duty at a London hospital, was the grandson and great-grandson of medical men, and his father, Dr H E Symes-Thompson, is consulting physician to the Royal Chest Hospital Richard Symes-Thompson was born in 1912 and educated at Repton, Christ's College, Cambridge and St George's Hospital, where he won the Sir Charles Clark prize and the Thompson medal He qualified last year and was proceeding to the Cambridge M B He had held resident posts at St George's and at St Luke's Hospital, Chelsea At Cambridge he was secretary of the university medical society, and he was also secretary of his medical school club and for the past four years editor of the hospital gazette He played cricket for St George's regularly and also appeared for the Incogniti, the M C C and the Repton Pilgrims He had a fine physique and his friends testify that he was efficient as well as strong with an unusual capacity for helping others He had a natural gift for dealing with his patients, and m remember the charm of manner that went humbleness and keenness to learn

Ramsey & Muspratt Cambridge

HARRY WINTON DRYERRE

M B EDIN , F R C P E , SQUADRON-LEADER, R A

Squadron-Leader H W Dryerre died on June result of a motor accident He was the son of Dr Dryerre, professor of physiology in the Royal Veterinary College, Edinburgh He gradu medicine at the University of Edinburgh in 1934, a member of the Royal College of Physicians of Edinburgh two years later and was elected to the fellowship of that college in 1940 He held various hospital appointments in Edinburgh and before the outbreak of war was a tutor in clinical medicine in the Edinburgh Royal Infirmary, assistant in the department of pathology of the university and pathologist to the Edinburgh municipal hospitals *He had been a member of the* medical branch of the R A F Volunteer Reserve for some time and was called up at once Harry Dryerre was an active and energetic young man with a considera for research He held the Crichton scholarship and for *some time before the war* he was engrosse study of Addison's disease In the R A F hos which he was posted he rapidly became a valued of the staff and his enthusiasm and ability were the full by his colleagues

PROF R ROBISON

THE sudden death of Robert Robison, head biochemical department at the Lister Institute s retirement in 1930 of his former chief the late Si Harden, comes as a severe blow not only to his co and many friends but also to the Institute's and to the science to which for nearly thirty yea given unswerving devotion When I *saw* h writes Sir John Ledingham, on the afternoon of in his room at the Lister he was feeling relie sciatic pains and cramps which had troubled him the previous fortnight, and which he was inc attribute to overstrenuous gardening and fire had left him and he was busy with his notes of for the Royal Society obituary series Less than four hours later he had followed his old chief unknown, having succumbed to a stroke in th hours Physically never robust Robison had gre *of nervous energy on which*, unfortunately for hi was too often apt to overdraw, for no-one wa conscientious than he in the conduct of a re department or more unselfishly devoted to the d of offices that came to him from outside To his and the numerous workers from many *countries* to his department offered research facilities Robiso himself unstintingly and he was never so happy as a piece of work he had helped to pilot proved itself Without doubt he spent himself in service and it is reflection now that for him there was to be no wished-for retirement in which to cultivate his bel garden at his Putney home By 1930 when he elected to the Royal Society, Robison's sci reputation based inter alia on his remarkable ser researches into the chemical mechanism of calcifica of cartilage was thoroughly established, and it was to vast subject of the phosphoric esters which his work illuminated that he devoted his Herter lectures in York Robison's work goes on, it is never finished' we mourn today the loss of his sympathetic and direc mind and of that catholic human interest that made a power for good in our community To his widow daughter our sincerest sympathy goes out

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SULPHONAMIDES LOCALLY —A level *tablespoo* [illegible]nts 10 g (correcting a slip in last week's lea article)

FORTIFIED BREAD

CT OF CALCIUM SUPPLEMENTS ON INVALIDS

edical Research Council have issued the follow- ment giving the views of their food rationing iets) advisory committee on the likely effects ds of bread fortified with calcium as proposed nemo published in The Lancet of May 31

ugencies of the present situation have forced people of the country a diet which requires if to be maintained the addition of a supplement salts The need for this supplement is brought two main ways First the war-time diet tends ficient in available calcium, especially since s have been imposed upon the sale of milk and ond, the high content of cereal foods in the diet the amount of calcium it is necessary to ingest rtly because most cereals are deficient in t also because the presence of phytic acid in en prevents the body from making use of the ey contain The Ministry of Food have asked Rationing (Special Diets) Advisory Committee the addition of small supplements of calcium our would be in any way deleterious to invalids the committee expressed the opinion that is neither medical nor scientific evidence that the tion of bread made from flour fortified by the of appropriate quantities of calcium salts is to patients suffering from any type of disease ’ ion was based on the following considerations been proposed by the Accessory Food Factors ee of the Lister Institute and of the Medical Council that 14 oz of calcium carbonate be each 280 lb of 85% extracted flour and 7 oz m carbonate to each 280 lb of white flour ng these quantities in other terms it can be t 1 lb of the “ fortified ” 85% extracted d 2 lb of the ‘ fortified ” white flour contain less calcium than 1 pint of fresh milk There efore be no objection to the use of this fortified the grounds that it will result in the consump- valids of harmful amounts of calcium It is, necessary to dispel a current misconception ard to the qualitative aspect of this fortification een suggested that the consumption of fortified ught have a deleterious effect upon certain not because of the increased calcium content use the calcium added to it is in a form—the te of calcium—different from that which exists in food and that this carbonate of calcium is This criticism appears to be ill-founded direct evidence obtained on human beings that ium of calcium carbonate is as available to the s that of calcium phosphate In an easily ble food such as milk calcium is in the form of a ion with a phosphoric acid a common normal ent of animal tissues in calcium carbonate is also present as the salt of an acid of widespread nce in living tissues In both cases the calcium off from the acid during the process of digestion s absorbed into the body in the same form in each

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llowing appointments and awards have been made for nduct in civil defence

—Dr J D Dillon (Greenwich) Dr Daniel Millar) Dr J S Ord (Glasgow) and Dr H Glyn Jones (Lambeth) edal —Dr Laura Bateman (Shooter s Hill) Captain Hugh Miller R.A.M.C

eting of the Tuberculosis Association will be held at on Saturday, July 5 at 26, Portland Place, London, n the morning Dr H E Magee will read a paper on e diets and pulmonary tuberculosis and Dr George some experiments in diet In the afternoon Prof eddon will speak on joint tuberculosis with special e to the spine and sacro iliac joints

th annual meeting of the Royal Medico Psychological tion will be held at noon on Thursday July 17, at 11, s Street London W 1 At 2 P M. in the Barnes papers will be read on Ear, Nose and Throat al Disorder

Medical News

Rockefeller Medical Studentships 1941

The selection committee, of which Sir John Stopford is chairman, has chosen the following 26 students out of more than 90 applicants for overseas clinical training They will be allocated to 19 different university medical schools in the U S A and Canada These studentships are in the first instance tenable for one year, renewable on the recommendation of the American dean

Name	*Medical School*	*Name*	*Medical School*
J Badenoch	Oxford	M A O Hea	Glasgow
C W Bartley	London Hospital	D A Pond	Cambridge
		G Rankine	St Andrews
F F B Cadman	Liverpool	R J Scothorne	Leeds
J Davies	Leeds	J Sharp	Manchester
D A W Edwards	Cambridge	R H Shephard	Univ Coll, London
M A Flover	Cambridge		
J B Gibson	Edinburgh	J V Shepheard	Liverpool
R H Gosling	Birmingham	J P Shillingford	London Hospital
I R Gray	Univ Coll, London	J D Stephens	St Andrews
		J M Stowers	Cambridge
P J Hare	Univ Coll London	G I M Swyer	Oxford
		J M Tanner	St Mary s
P R A May	Cambridge	I P Todd	St Bart’s
M Newton	Cambridge	R G Turner	Cambridge

Hospitals and Petrol

The Ministry of Health has notified authorities with hospitals included in the E M S, and all voluntary hospitals included in the service, that petrol supplies are to be reduced It is important there should be no waste of petrol, so the use of motor vehicles should be restricted to the minimum necessary for the effective execution of hospital duties

Ling Physical Education Association

Dr M Burbury, medical director of the Manchester Child Guidance Clinic, will lecture to the Leeds and District Swedish Gymnastic Association on July 5 on ‘ Interactions of Mind and Body ’ Dr G Prince, assistant medical officer at Leeds, will open a group discussion on coöperation between the school medical officer and the gymnastic teacher A discussion on the broad aspect of the youth movement will be opened by Prof Frank Smith and Miss D Edwards-Rees youth organiser to the West Riding County Council Practical classes in gymnastics, national dancing, vaulting and playground games will be held

Births, Marriages and Deaths

BIRTHS

Cheshire —On June 20 the wife of Dr Peter Cheshire, of Lincoln—a son

Douglass —On June 12 at Harrow Weald Middlesex the wife of Dr W Michael Douglass—a daughter

Fell—On June 21 at St Mary’s Hospital, W 2 the wife of Dr David W Fell of Colchester—a son

Hardman —On June 19 at Gillingham Kent the wife of Surgeon Lieutenant G L Hardman R.N —a daughter

Holford —On June 23 at Worcester the wife of Surgeon Lieut - Commander J M Holford R N —a son

MacLellan —On June 18 at Girvan the wife of Surgeon Lieutenant P Desmond MacLellan R N V R —a daughter

Pearson —On June 16 at Hartley Wintney, the wife of Dr Rupert Bruce Pearson—a daughter

Slee —On June 19 at the Radcliffe Infirmary Oxford the wife of Surgeon Lieutenant M A Slee R N V R —a son

Truelove —On June 21 at Cambridge, the wife of Captain S C Truelove R A M C —a daughter

MARRIAGES

Davies—Bees —On June 17 at Prestatyn David Joseph Davies, M B captain R.A M C of Bargoed Glam to Betty Mary Bees of Knowle, Warws

Dickins—Argent —On June 12 at Worcester Sidney J O Dickins M D of Cowfold to Eleanor Argent

Hesketh—Middleton —On June 21 at Taunton John Smallshaw Hesketh M R C S of Southport to Jean Hughes Middleton

Hooker—Pinnington —On June 21 A Gordon Hooker M.R.C S lieutenant R A.M C of Harpenden to Joan Pinnington of Romiley Cheshire

Robinson—Monk.—On June 12 at Penge Richard Garwood Robinson M.B flying officer R.A F V R., to Florence Ellen Monk.

DEATHS

Barton —On June 23 at Norwich Samuel J Barton M D Dubl aged 89

Danvers Atkinson —On June 22 at Southminster, Frederick Cecil Edgar Danvers Atkinson M B Lond

Sing —On June 23 at Cadogan Gardens S W 3 Wilfrid MacDonald Sing M D Camb aged 71

Winchester —On June 21 in London George Chisholm Winchester, M B Edin , of Ealing (late of Assam)

Notes, Comments and Abstracts

PREPARING GREEN VEGETABLES FOR THE TABLE

THE accessory food factors committee of the Medical Research Council has summarised our knowledge of the behaviour of vitamins in greenstuffs in the processes of preparation for the table, and has drawn up some simple rules by which the nutrients can be conserved to the utmost

Fat-soluble vitamin A is unlikely to suffer damage , water-soluble vitamins B and C are the most likely to be lost on preparation and cooking This is so for the following reasons

1 Being water soluble, they are dissolved out by soaking or cooking water , they also run out in the watery juice

2 Raw vegetables contain enzymes which are active in destroying the vitamins, particularly if the raw foodstuff is left lying about after being bruised or cut up These sub stances which destroy the vitamins become more active as the temperature rises during cooking up to a point at which they themselves are destroyed This point of destruction is only a few degrees below boiling temperature

3 The water soluble vitamins are themselves also destroyed by heat to an extent which depends on the length and severity of the heating

4 The water soluble vitamins are found to diminish in amount in foods left standing after they are cooked

5 Salt or sugar added to vegetables before cooking lessens the amount of destruction under conditions described in 3 and 4

6 Vitamins B and C are more stable in the presence of acid, which is sometimes added as vinegar The addition of alkali (carbonate or bicarbonate of soda) will, on the other hand, hasten the destruction of the vitamins

If vitamins are to be conserved green vegetables should be obtained as fresh as possible and kept in a cool damp place in order to reduce wilting Crushing or bruising during transport or handling must be avoided as far as possible If vegetables are soaked, use salt water (2 teaspoonfuls to 1 pint) , and if they are to be shredded or finely chopped for salads, prepare them immediately before serving (The smallest possible amount of water should be used for cooking, and it must be boiling before the vegetables are put in) Salt should be put into the water before vegetables are added Vegetables should be put in gradually or in small amounts at a time, so that the water does not go off the boil Vegetables should be cooked no longer than is necessary to make them tender, and cooking arrangements should be planned so that vegetables are dished up and served immediately after they are cooked On no account should they be allowed to stand for a long time on a hot plate If there is water left after cooking, it should be drained off and used to make soups and gravies , or, if successive batches of vegetables are being cooked on the same day the same water can be used again, more being added if necessary

METHODS RECOMMENDED

Method 1 —Boil for the shortest time in a small quantity of boiling salted water Use water left over for boiling other batches and for addition to soups and gravies

Method 2 —Slice the fresh vegetables into ribbons about 2–3 in long by ¼ in wide and cook briskly for ½–1 minute in a small quantity of hot oil or dripping to which salt has been added (2 teaspoonfuls oil and ½ teaspoonful salt to an average sized cabbage) Add a small quantity of boiling water (½–1 cupful for above) and stew for about 10 minutes in a closed container Keep the lid on so that no steam escapes When the vegetables are cooked only a very little water should be left

Method 2 is used throughout the Far East and India In Europe the nearest approach to it is the French method of " casserole " or " conservative " cooking by which the vegetables are placed in a closed fireproof dish with a little water and fat and cooked in the oven or over a low flame for 15–25 minutes In hay-box cookery vitamin C is destroyed so that this method should not generally be used for cooking [illegible] ing, even with the best equipment, is not as s as the methods described above, which also hav advantage of conserving the valuable mineral present in green vegetables

FRESH AIR

A MOMENT when most editors are hunting for a half-sheet of paper to receive their surging thought seem inauspicious for launching a new journal war always sends up the birth-rate and a newcom such a purpose in life as the *M T E Journal* de welcome It is to be published monthly by the Training Establishment of the R A F Medical S and its editorial staff hope to provide a link betw ranks and units of those services both at hom abroad The journal is to contain educative and nursing articles—and begins well with a pa burns by Wing-Commander Stanford Cade, a account of the preparation of a surgical trolle nursing sister—as well as articles of general The first issue also carries verses, humorous drawi a clever competition based on problems of first a other journal has attempted to cover such a wid of interests or to appeal to doctors, nurses and o The programme is ambitious but plenty of should be available , the names of diseases, inve the W A A F s under examination stress, are an a ment in themselves which of us has not suff times from delulity and memoralgia ? Und editorship of Group-Captain J Kyle and his a editor Corporal R H Smith the journal shoul lose all flavour of the school-magazine and bec entertaining and capable throughout as it alrea places

A MANUAL OF HERB GATHERING

WE have already called attention to this e 50-page pamphlet[1] on harvesting medicinal Dr James remarks that these are not eaten wh fresh like vegetables (some of them, perhaps, mig be), and the first step to preserve them is always drying How this should be done Mrs Keen a Armstrong, from long experience at the Valeswoo Farm, are able to tell the would-be collector in practical terms, not above the heads of guides and while the publisher has garnished the salad w Fitch's beautiful line drawings, borrowed from " I tions of the British Flora " (L Reeve & Co), brochure can be obtained for ninepence

The annual meeting of the Auxiliary R A M C F be held 12 noon on Friday, July 11, at 11, *Chando* London, W 1, when a financial statement will be p and officers elected for the current year

In the article on the milling aspects of fortified Dr Kent Jones and Dr Amos in THE LANCET of (p 731), the sentence beginning at line 7 in para should read " The concentrate is made by dissolv of aneurine in water "

Appointments

CAVENDISH, ALFRED M B Lond R S O at the Children s Hospital, Birmingham

GUBBINS ROBERT CHARLES, M B Lpool, D P H M O H for Chorley, Lancs

HOCKEY MAURICE EDWARD, M B Glasg , D P H deputy M O H for Bootle

SUL

article)

SOLUTION OF LAST WEEK'S CROS

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R	E	S	E	A	R	C	H	▨	P	A
Y	▨	A	▨	L	▨	H	▨	A	▨	G
N	E	R	E	I	D	▨	E	S	C	U
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D	O	L	L	A	R	▨	O	V	E	R
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R	O	A	M	E	R	▨	A	D	E	N

MEDICAL CO

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[1] Herb Gathering, by Barbara Keen and Jean Armstron foreword by W O James, D Phil London Br Schimmer (drug millers) 1, Leather Market, S E 1